Scientific Activities of the Government of British Columbia 1988-1989 Survey Results

Ministry of Advanced Education, Training and Technology
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SCIENTIFIC ACTIVITIES OF THE GOVERNMENT OF BRITISH COLUMBIA 1988-89 SURVEY RESULTS

A REPORT PREPARED BY:

JANET THOMPSON AND BEVERLEY WATIER
SCIENCE AND TECHNOLOGY STATISTICS SECTION
SCIENCE, TECHNOLOGY AND CAPITAL STOCK DIVISION
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CHANGES IN GOVERNMENT ORGANIZATION

In July 1988, a number of ministries were reorganized. Mandates changed or were combined and/or shifted to newly created ministries. In an attempt to clarify fluctuations in data between 1987-88 and 1988-89, the following list shows the reorganization of the government. Ministries not affected by the reorganization are not listed here.

1987-88		1988-89
Attorney General	_____	Attorney General
	_____	Solicitor General (N/A)
Economic Development	_____	Regional Development
	_____	International Business and Immigration (N/A)
	_____	Finance & Corporate Relations (Central Statistics Bureau)
Environment & Parks	_____	Environment
	_____	Parks
	_____	Crown Lands
Forests & Lands	_____	Forests
Municipal Affairs	_____	Municipal Affairs, Recreation and Culture
Tourism, Recreation and Culture	_____	Tourism and Provincial Secretary
Provincial Secretary and Government Services	_____	Government Management Services (N/A)

FOREWORD

During the third week of May, 1989, Janet Thompson of Statistics Canada conducted the thirteenth annual survey of scientific activities of the Government of British Columbia. This report, containing natural sciences and engineering, and social sciences and humanities data, is a result of the goodwill and efforts of officials of responding Ministries and agencies. The assistance provided by Mr. T.A. Prentice, Manager, Science and Technology Division, Ministry of Advanced Education and Job Training and Mrs. Barbara Archer of the same Ministry are most gratefully acknowledged and appreciated.

Below is a list which shows the inclusion/exclusion of provincial governments within the provincial survey program.

Year	Inclusion	Exclusion
1974	Alberta Ontario Nova Scotia	
1975	Saskatchewan	
1977	British Columbia	Nova Scotia
1984	New Brunswick	
1985	Manitoba	
1986	Newfoundland	
1987	Nova Scotia	
1989	Québec	

Note that data on scientific activities in the social sciences and humanities were not collected in British Columbia for 1982-83 and 1984-85 but are estimates provided in the respective previous years surveys.

We also wish to note that expenditures reported by the Ministry of Forests this year, do not include a capital grant to Forintek for construction of a new research facility. This capital grant amounts to $4.75 million in 1988-89 and $4.0 million in 1989-90.

A historical revision has been made to the response of the Provincial Museum back to 1985-86. This revision includes in the response, the rent charges which are now included in the Museum's budget.

Expenditures of the Ministry of Advanced Education and Job Training have increased substantially since 1987-88 as they are administering the new S&T Development Fund (STDF) which was put in place by the Premiers Advisory Council on S&T (PACST) early in 1988.

Reports similar to this one are available on request from the provincial Ministry or Department sponsoring the survey; a list of contacts is provided on page 105. The Science Statistics Section of Statistics Canada produces a historical summary report upon completion of each years surveys, including data from all provincial reports, which will serve as a basis for interprovincial and intersectoral comparisons. It must be recognized, however, that due to limitations of the available data, these figures should be considered only as reasonable approximations.

Surveys of the scientific activities of provincial governments serve several purposes. They provide an essential data base for analysis and the formulation of provincial science policy. They also provide data for the development of a national aggregate R&D series. National aggregates for the current year are published by Statistics Canada in **Indicators of Science and Technology**, (Catalogue No. 88-002) and are available historically on CANSIM, Statistics Canada's computerized data bank (series 7943). The national aggregates are also needed to complete the international questionnaires for the Organization for Economic Co-operation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

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by Ministry or Agency	2	18	24	53	46	75
by Performer	3	19	25	54	47	76
Total Expenditures on R&D:						
by Performer	4	19	26	54	48	76
by Ministry or Agency	5	20	27	55	49	77
Ministerial Personnel Engaged in Scientific Activities, by Activity and Category	6	21	28	56	50	78
Expenditures in 1988-89 Fiscal Year:						
Total Expenditures:						
by Ministry or Agency and Sources of Funds	7	23	29	57	51	79
by Activity and Performer	8	25	30	57	52	79
by Ministry or Agency and Performer	9	27	31	58	53	80
by Ministry or Agency and Activity	10	28	32	59	54	80
Total Expenditures on R&D, by Ministry or Agency and Performer	11	29	33	60	55	81
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Ministerial Personnel Engaged in Scientific Activities, by Ministry or Agency, Activity and Category	13	31	35	61	57	82
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The following symbols are used in this report:

-	nil or zero
--	amount too small to be expressed
...	figures are not available or not applicable
r	revised figures
e	estimated figures

DEFINITIONS

This report covers those scientific and technological activities which involve the generation, dissemination and application of new scientific and technological knowledge. The central activity is research and experimental development (R&D). In addition, there are a number of related scientific activities (RSA) which are considered in less detail.

R&D is creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humans, their culture and society and the use of this knowledge to devise new applications. It requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the re-evaluation of existing observations.

The major **related scientific activities** are education support, technical surveys, statistical surveys, information services, special services and studies, and museum services. Education support, statistical surveys and museum services are largely self-explanatory.

Technical surveys are activities directed towards the exploration and systematic description of the earth and its natural resources. The activities include the gathering, processing, collating and analyzing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Information services are activities directed to recording, classifying, translating, and disseminating scientific and technological information **(Technology Transfer)** as well as information resulting from R&D in the social sciences or required in support of such R&D. Included are the operations of scientific and technical libraries, specialized libraries and archives, the publication of scientific journals and bibliographies, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

Special services and studies in the natural sciences are activities directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects. In the social sciences, special services and studies are systematic investigations carried out in order to provide information needed for planning or policy formulation, including feasibility studies, and demonstration projects.

Natural sciences consist of disciplines concerned with understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical, environmental, life and physical sciences.

Social sciences and humanities include all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, communications, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political science, psychology, religious studies, social work, sociology and urban and regional studies.

Five **performing sectors** are identified besides the British Columbia Research Council. **Intramural** refers to units of the provincial government performing scientific activities that are normally carried out by personnel assigned to the Ministry and usually in facilities of the Ministry. **Industry** consists largely of private corporations but also includes crown corporations with a commercial function (e.g., power utilities) and industrial research institutes not controlled by another institution. Consultants providing scientific and engineering services are also included. **Universities** cover post-secondary educational institutions and affiliated teaching and research facilities. Also included are industrial research institutes affiliated with a university. **Hospitals and health organizations** are health organizations such as the Heart Foundation and hospitals which do not belong to the universities sector.

Other includes non-resident performers of scientific activities funded by the provincial government, as well as recipients not covered elsewhere such as the federal government, other provincial Ministries and individuals.

Expenditures are either current or capital. **Current expenditures** include costs of personnel, transportation and communications, information, professional and special services, rentals, purchased repair and upkeep, utilities, materials and supplies. **Capital expenditures** are those for the construction and acquisition of land, buildings, machinery and equipment. **Total expenditures** comprise current plus capital expenditures.

HIGHLIGHTS

In the 1988-89 fiscal year the Government of British Columbia spent $128 million or 1.1% of its budgeted expenditures on scientific activities. While the total government expenditures for 1989-90 are estimated to increase by 12.8%, scientific expenditures are expected to rise by 18.4%.

TEXT TABLE I. Government of British Columbia Expenditures

Year	GDP implicit price index (1981=100)[1]	Expenditures on scientific activities		Provincial budgeted expenditures[2]	Scientific activities/ provincial
		Current dollars	1981 dollars	budget	
		($'000,000)		($'000,000)	(%)
1982-83	108.7	87.1	80.1	7,513.3	1.2
1983-84	114.1	76.9	67.4	8,356.4	0.9
1984-85	117.7	67.7	57.5	8,390.0	0.8
1985-86	121.1	85.6	70.7	9,056.0	0.9
1986-87	124.2	99.1	79.8	9,643.0	1.0
1987-88	129.6	116.8	90.1	11,071.4	1.1
1988-89	135.0	128.2	95.0	11,959.0	1.1
1989-90[e]	...	151.8	...	13,487.0	1.1

1 Source: Bank of Canada Review, March 1989

2 Province of British Columbia Estimates

TEXT TABLE II. Government of British Columbia Expenditures on Scientific Activities, by Activity and by Ministry, 1988-89

Ministry or agency	Natural Sciences			Social Sciences and Humanities		
	Research and development	Related scientific activities	Total	Research and development	Related scientific activities	Total
	($'000,000)					
Advanced Education & Job Training	14.0	2.5	16.5	-	1.0	1.0
Agriculture & Fisheries	1.4	6.1	7.5	-	-	-
Crown Lands	0.6	15.2	15.8	-	-	-
Energy, Mines & Petroleum Resources	0.1	8.7	8.8	-	-	-
Environment	1.5	5.9	7.4	-	0.1	0.1
Forestry	18.4	16.0	34.4	-	-	-
Health	-	-	-	0.2	2.3	2.5
Municipal Affairs, Recreation & Culture	-	5.9	5.9	0.1	3.9	4.0
Regional Development	-	-	-	-	6.3	6.3
Tourism & Provincial Secretary	-	-	-	-	3.9	3.9
Others	9.2	1.5	10.7	-	3.5	3.5
TOTAL	**45.2**	**61.8**	**107.0**	**0.3**	**21.0**	**21.3**

Of the total 1988-89 science expenditures, 83% ($107.0 million) was for activities in the natural sciences. Research and development represents 42.2% of natural science expenditures. The Ministry of Forests is the largest supporter of R&D activities followed by the Ministry of Advanced Education and Job Training. Advanced Education and Job Training's support for R&D in 1988-89, increased by approximately 12 million, as they are administering the new S&T Development Fund (STDF) which was set up by the Premiers Advisory Council on S&T early in 1988. Related scientific activities are supported largely by the Ministry of Forests and the Ministry of Crown Lands. Both Ministries conduct a large number of technical surveys.

Social science activities account for almost 17% of the total BC government science expenditures. Ministries supporting social science activities are Regional Development; Municipal Affairs, Recreation and Culture; Tourism and Provincial Secretary and Health. Almost all (99%) of social science expenditures were for related scientific activities.

TEXT TABLE III. Government of British Columbia Expenditures on Scientific Activities, by Activity and Performer, 1988-89

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C Research Council	Other	Total
	($'000,000)						
Current expenditures:							
Research & development ..	13.0	10.4	10.5	0.2	2.1	7.7	43.9
Related scientific activities	57.3	15.8	1.7	0.3	0.2	3.6	78.9
Capital expenditures:							
Research & development ..	0.4	...	...	...	...	...	0.4
Related scientific activities	2.6	...	...	...	...	...	2.6
Administration of extramural programs:							
Research & development ..	1.2	...	...	...	...	...	1.2
Related scientific activities	1.2	...	...	...	...	...	1.2
TOTAL	**75.7**	**26.2**	**12.2**	**0.5**	**2.3**	**11.3**	**128.2**

Note: Totals may not sum due to rounding.

The government itself performed 59% of all scientific activities. Twenty percent of the government science expenditures are contracted out to the industry sector.

In this report the scientific expenditures of the British Columbia Research Council reflect only the funding from the British Columbia government. Additional information on the British Columbia Research Council is available in **Science Statistics**, Catalogue No. 88-001, Vol. 12, No. 10.

TEXT TABLE IV. Government of British Columbia Personnel, by Selected Ministry or Agency and Category, 1988-89

Ministry or agency	Scientific and professional	Technical	Other	Total scientific personnel	Total Ministerial personnel(1)	% Science personnel to total personnel
	(person-years)					%
Advanced Education & Job Training	9	2	5	16	301	5.3
Agriculture & Fisheries	50	21	4	75	426	17.6
Crown Lands	11	76	13	100	464	21.5
Energy, Mines & Petroleum Resources	56	9	9	74	290	25.5
Environment	55	44	8	107	1,095	9.8
Forestry	139	151	53	343	3,462	9.9
Municipal Affairs, Recreation & Culture	51	49	26	126	729	18.7
Regional Development	57	6	17	80	540	14.8
Others	79	25	30	134	23,346	0.6
TOTAL	**507**	**383**	**165**	**1,055**	**30,653**	**3.4**

(1) "British Columbia Estimates, 1990"

Just over 3% (1,055 person years) of the provincial government's labour force were devoted to scientific activities in 1988-89. The scientific and professional category accounted for 48% of the total personnel, the technical category 36% and the other category 16%.

The major applications of scientific activities are reflected in Text Table V. Fifty four percent of the Government's science expenditures were devoted to Industrial and Economic Development in 1988-89. Forestry continues to be the prime sub-objective of Industrial and Economic Development ,accounting for almost 30% of the expenditures followed by Minerals, accounting for almost 8% of the expenditures.

Environmental issues are the second most sponsored objective of government scientific expenditures. This objective is supported mainly by the Ministry of Crown Lands and the Ministry of Environment.

As expected, social development was the focus of science expenditures in the social sciences and humanities. The Ministries of Municipal Affairs, Recreation and Culture; Tourism and Provincial Secretary and Regional Development were the most active in this area. The sub-objective with the largest expenditure was Culture, Sport and Recreation.

TEXT TABLE V. Objectives of the Government of British Columbia Expenditures on Scientific Activities, by Selected Ministry or Agency, 1988-89

Ministry or agency	Advancement of science	Communi-cations	Environ-mental issues	Health	Industrial and economic development	Social development and related areas	Other	Total
	($'000,000)							
Advanced Education & Job Training	2,045	1,858	-	3,468	9,011	569	548	17,499
Agriculture & Fisheries	-	-	-	-	7,466	-	-	7,466
Crown Lands	-	-	15,831	-	-	-	-	15,831
Energy, Mines & Petroleum Resources ..	-	-	180	32	8,560	-	-	8,772
Environment	260	-	3,736	-	1,280	55	2,149	7,480
Forestry	-	-	100	-	34,329	-	-	34,429
Municipal Affairs, Recreation & Culture .	-	-	-	-	-	9,611	359	9,970
Regional Development ..	74	265	226	62	4,490	954	201	6,272
Others	-	813	293	7,508	4,110	7,351	445	20,520
TOTAL	**2,379**	**2,936**	**20,366**	**11,070**	**69,246**	**18,540**	**3,702**	**128,239**

All Sciences

TABLE 1. Total Expenditures, by Activity, 1982-83 to 1989-90

Activity	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Research & development:								
Current expenditures:								
In-house	13,029	11,827	11,017	12,650	13,491	13,123	12,624	13,886
Contracts	1,694	1,838	2,849	3,071	3,812	4,532	5,484	6,751
Grants	7,679	7,661	5,910	8,903	7,079	12,740	22,865	35,089
Research fellowships	1,070	1,042	1,218	1,251	1,395	1,108	2,920	3,643
Administration of extramural R&D programs.	...	...	...	...	...	1,056	1,203	1,576
Sub-total	23,472	22,368	20,994	25,875	25,777	32,559	45,096	60,945
Capital expenditures	464	195	205	412	855	609	424	1,112
Related scientific activities:								
Current expenditures	62,115	53,550	45,651	58,462	71,019	78,843	78,906	86,129
Administration of extramural RSA programs	...	...	...	...	...	775	1,202	1,172
Sub-total	62,115	53,550	45,651	58,462	71,019	79,618	80,108	87,301
Capital expenditures	1,038	754	851	865	1,467	3,972	2,611	2,436
**Total	**87,089**	**76,867**	**67,701**	**85,614**	**99,118**	**116,758**	**128,239**	**151,794**

Note: For all tables, please refer to "The Respondents" section for reasons behind changes in data since last years survey.

Chart 1.

Total Expenditures on Scientific Activities, by Type of Activity, 1982–83 to 1989–90(e)

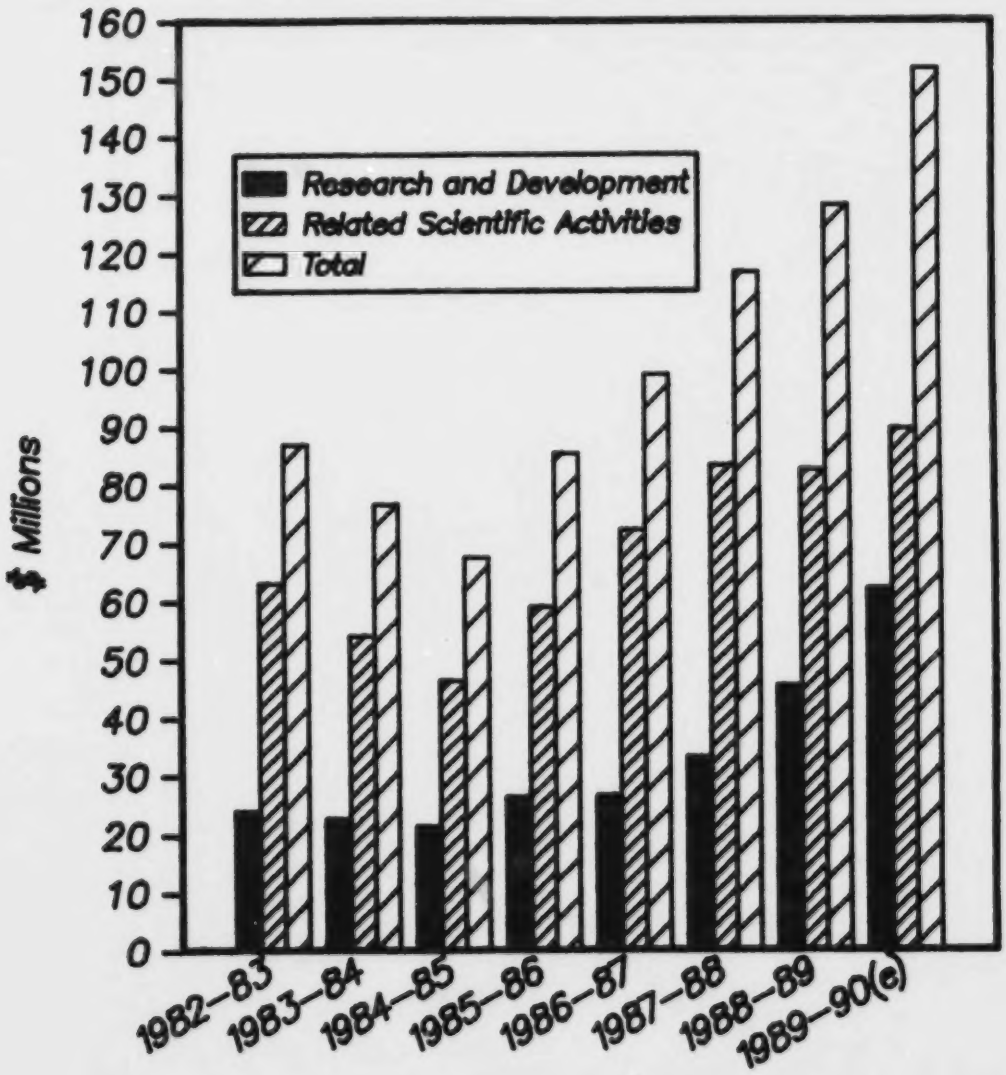


TABLE 2. Total Expenditures, by Ministry or Agency, 1982-83 to 1989-90

Ministry or agency	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Advanced Education & Job Training	...	...	...	...	...	5,008	17,499	19,035
Agriculture & Fisheries	...	...	...	...	...	4,646	7,466	8,743
Agriculture & Food	1,760	1,996	1,717	2,945	3,301	...	...	...
Attorney General	1,369	757	846	837	848	1,533	622	660
Consumer & Corporate Affairs	562	539	450	439	679	...	...	...
Crown Lands	...	...	...	...	...	...	15,831	18,558
Economic Development	...	...	...	...	...	8,775	...	...
Education	1,897	1,160	900	2,403	2,559	3,499	1,035	1,180
Energy, Mines & Petroleum Resources	10,421	13,160	4,330	6,197	9,267	10,596	8,772	8,481
Environment	20,626	17,691	18,715	18,770	22,676	...	7,480	7,667
Environment & Parks	...	...	...	...	...	27,641	...	...
Finance	2,277	-	-	52	95	...	...	...
Finance & Corporate Affairs	...	...	...	...	...	381	1,590	2,492
Forests	19,411	18,416	17,164	21,018	24,188	...	34,429	34,909
Forests & Lands	...	...	...	...	...	30,124	...	...
Health	1,780	1,436	1,602	1,960	1,670	1,364	2,457	2,103
Health Care Research Foundation	3,372	3,532	3,611	3,578	3,574	4,970	5,127	6,500
Human Resources	...	250	316	301	595	...	...	...
Industry & Small Business Development	8,240	5,348	5,348	4,539	6,121	...	...	...
International Trade, Science & Investment	...	...	...	3,828	3,242	...	...	...
Labour	1,236	157	157	393	352	...	...	...
Labour & Consumer Services	...	...	...	...	...	175	85	85
Lands, Parks & Housing	546	620	766	...	372	...	...	...
Municipal Affairs	351	389	391	510	766	749	...	...
Municipal Affairs, Recreation & Culture	...	...	...	...	...	...	9,970	12,086
Native Affairs	...	...	...	...	...	...	14	5
Parks	...	...	...	...	...	...	785	910
Postsecondary Education	...	...	...	1,883	1,561	...	...	...
Provincial Secretary & Government Services	5,861	5,182	6,220	11,650	12,790	2,256	...	...
Regional Development	...	...	...	...	...	...	6,272	6,160
Science Council of B.C.	4,209	4,002	3,450	3,800	3,800	4,156	4,928	16,940
Social Services & Housing	...	...	...	...	...	-	-	-
Tourism	300	323	393	215	353	...	...	...
Tourism & Provincial Secretary	...	...	...	...	...	...	3,857	4,857
Tourism, Recreation & Culture	...	...	...	...	...	10,651	...	...
Transportation & Highways	1,086	345	425	296	309	234	20	423
Universities, Science & Communications	1,785	1,564	900	...	...	...	...	...
Total	**87,089**	**76,867**	**67,701**	**85,614**	**99,118**	**116,758**	**128,239**	**151,794**

TABLE 3. Total Expenditures, by Performer, 1982-83 to 1989-90

Performer	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Intramural	64,102	52,344	50,526	64,343	74,843	82,776	75,696	82,833
Industry	12,315	14,510	7,144	8,706	11,576	18,355	26,238	35,470
Universities	5,321	5,697	5,854	6,309	6,819	9,214	12,156	16,599
Hospitals & health organizations	257	330	202	2,319[2]	474	429	569	1,082
B.C. Research Council[1] ...	1,895	1,765	1,168	1,026	1,296	1,924	2,303	2,658
Other	3,199	2,221	2,807	2,911	4,110	4,060	11,277	13,152
**Total	**87,089**	**76,867**	**67,701**	**85,614**	**99,118**	**116,758**	**128,239**	**151,794**

1 Includes only annual funding by Provincial Government.
2 Includes a $2.0 million grant to the Biomedical Processing Centre.

TABLE 4. Total Expenditures on R&D, by Performer, 1982-83 to 1989-90

Performer	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Intramural	14,027	12,505	11,511	13,411	14,464	15,017	14,606	16,939
Industry	2,299	2,246	2,024	2,274	2,243	5,490	10,425	18,166
Universities	5,270	5,259	5,356	5,447	5,753	7,696	10,453	15,038
Hospitals & health organizations	203	290	162	2,260[2]	403	341	245	1,000
B.C. Research Council[1] ...	1,227	1,147	594	515	790	1,599	2,125	2,375
Other	910	1,116	1,552	2,380	2,979	3,025	7,666	8,539
**Total	**23,936**	**22,563**	**21,199**	**26,287**	**26,632**	**33,168**	**45,520**	**62,057**

1 Includes only annual funding by Provincial Government.
2 Includes a $2.0 million grant to the Biomedical Processing Centre.

TABLE 5. Total Expenditures on R&D, by Ministry or Agency, 1982-83 to 1989-90

Ministry or agency	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Advanced Education & Job Training	...	...	...	...	...	2,875	13,997	14,940
Agriculture & Fisheries	...	...	...	...	...	1,313	1,433	1,521
Agriculture & Food	577	695	345	150	486	...	...	...
Attorney General	193	125	125	54	60	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	...	...	...
Crown Lands	...	...	...	...	...	...	641	1,170
Economic Development	...	...	...	...	...	50	...	...
Education	-	-	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	1,290	1,393	866	1,003	200	-	115	-
Environment	2,284	1,809	1,752	2,087	2,069	...	1,486	1,490
Environment & Parks	...	...	...	...	...	1,820	...	...
Finance	-	-	-	-	-	...	...	...
Finance & Corporate Affairs	...	...	...	...	...	-	-	-
Forests	9,866	8,688	9,481	11,915	14,563	...	18,381	20,613
Forests & Lands	...	...	...	...	...	17,438	...	...
Health	102	153	160	410	95	99	221	250
Health Care Research Foundation	3,372	3,532	3,611	3,578	3,574	4,970	5,127	6,500
Human Resources	...	45	58	55	49	...	...	...
Industry & Small Business Development	-	25	25	20	60	...	...	...
International Trade, Science & Investment	...	...	...	2,676	1,249	...	...	...
Labour	-	-	-	-	-	...	...	...
Labour & Consumer Services	...	...	...	...	...	-	-	-
Lands, Parks & Housing	5	-	-	...	-	...	...	...
Municipal Affairs	22	39	39	-	-	-	...	...
Municipal Affairs, Recreation & Culture	...	...	...	...	...	...	111	137
Native Affairs	...	...	...	...	...	...	-	-
Parks	...	...	...	...	...	...	-	-
Postsecondary Education	...	...	...	-	15	...	...	...
Provincial Secretary & Government Services	860	1,019	682	478	357	-	...	...
Regional Development	...	...	...	...	...	...	-	-
Science Council of B.C.	4,209	3,890	3,450	3,800	3,800	4,156	3,991	15,300
Social Services & Housing	...	...	...	...	...	-	...	...
Tourism	-	-	-	-	-	...	...	...
Tourism & Provincial Secretary	...	...	...	...	...	...	-	-
Tourism, Recreation & Culture	...	...	...	...	...	322	...	...
Transportation & Highways	48	40	55	61	55	125	17	136
Universities, Science & Communications	1,108	1,110	550	...	...	...	...	...
Total	**23,936**	**22,563**	**21,199**	**26,287**	**26,632**	**33,168**	**45,520**	**62,057**

TABLE 6. Ministerial Personnel Engaged in Scientific Activities, by Activity and Category, 1982-83 to 1989-90

Activity and category	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	(person-years)							
Research & development:								
Scientific & professional	166	148	127	125	122	120	109	113
Technical	141	121	113	99	90	82	78	81
Other	42	41	41	47	38	29	29	30
Sub-total	349	310	281	271	250	231	216	224
Related scientific activities:								
Scientific & professional	430	368	324	404	470	458	374	436
Technical	522	439	348	373	349	349	294	290
Other	256	224	188	223	219	202	127	142
Sub-total	1,208	1,031	860	1,000	1,038	1,009	795	868
Administration of extramural programs:								
Scientific & professional	...	...	...	...	...	19	24	28
Technical	...	...	...	...	...	9	11	10
Other	...	...	...	...	...	11	9	10
Sub-total	...	...	...	...	...	39	44	48
All activities:								
Scientific & professional	596	516	451	529	592	597	507	577
Technical	663	560	461	472	439	440	383	381
Other	298	265	229	270	257	242	165	182
**Total	**1,557**	**1,341**	**1,141**	**1,271**	**1,288**	**1,279**	**1,055**	**1,140**

NOTE: Although 1987-88 is the first year that person-years devoted to the administration of extramural programs are being shown separately, these personnel have been previously included, in most cases, under the activity being administered.

Chart 2.

Ministerial Personnel Engaged in Scientific Activities, by Type of Activity, 1982–83 to 1989–90(e)

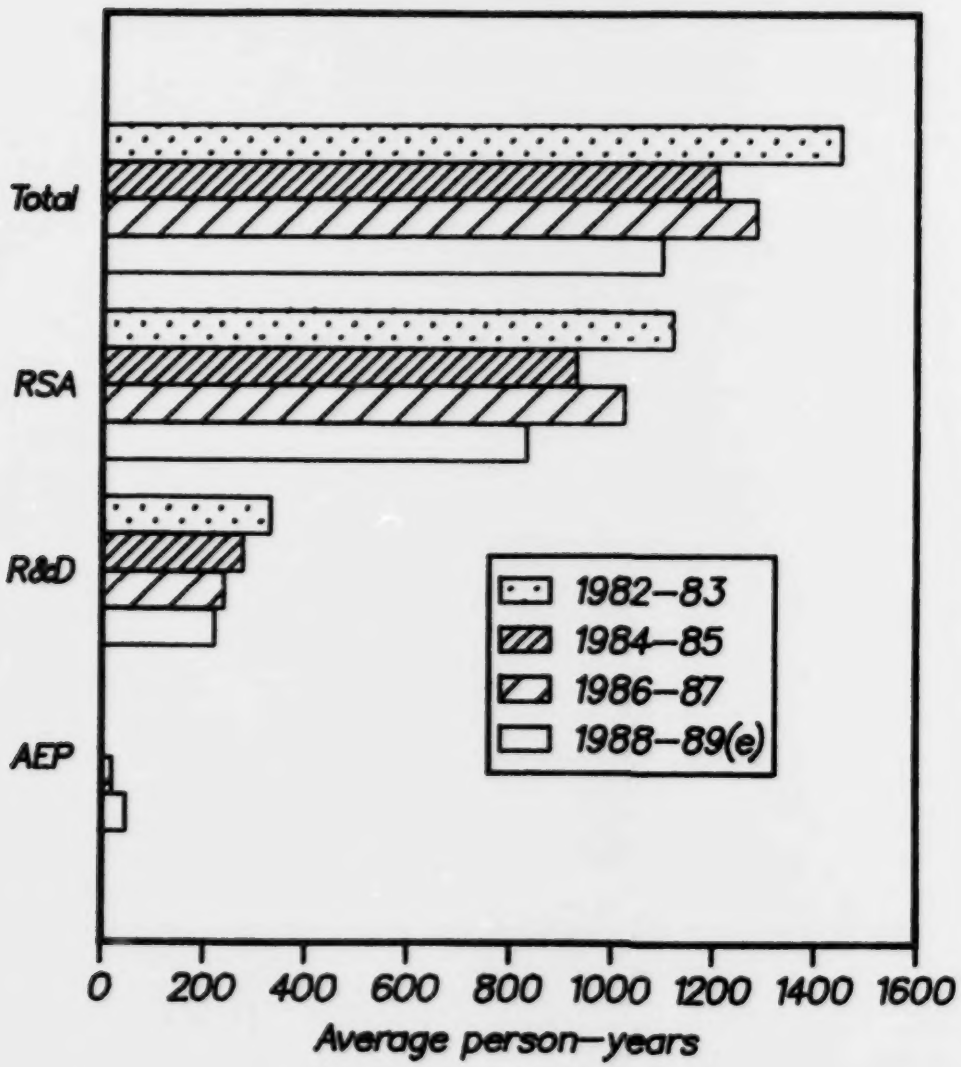


TABLE 7. Total Expenditures, by Ministry or Agency and Sources of Funds, 1988-89

Ministry or agency	Ministerial budget	Transfers from other ministries	Transfers from federal government	From trust funds	From other sources	Total
	($'000)					
Advanced Education & Job Training	16,073	-	1,426	-	-	17,499
Agriculture & Fisheries	6,459	-	1,007	-	-	7,466
Attorney General	622	-	-	-	-	622
Crown Lands	13,518	1,725	350	-	238	15,831
Education	1,035	-	-	-	-	1,035
Energy, Mines & Petroleum Resources	7,046	914	812	-	-	8,772
Environment	7,306	-	-	-	174	7,480
Finance & Corporate Affairs	1,590	-	-	-	-	1,590
Forests	28,971	3,027	2,431	-	-	34,429
Health	2,392	-	65	-	-	2,457
Health Care Research Foundation	-	-	-	-	5,127	5,127
Labour & Consumer Services	85	-	-	-	-	85
Municipal Affairs, Recreation & Culture	8,487	-	307	587	589	9,970
Native Affairs	14	-	-	-	-	14
Parks	785	-	-	-	-	785
Regional Development	6,044	-	228	-	-	6,272
Science Council of B.C.	4,300	143	100	-	385	4,928
Tourism & Provincial Secretary	3,353	-	504	-	-	3,857
Transportation & Highways	20	-	-	-	-	20
Total	**108,100**	**5,809**	**7,230**	**587**	**6,513**	**128,239**

Chart 3.

Total Expenditures on Scientific Activities, by Source of Funds and Science Type, 1988–89

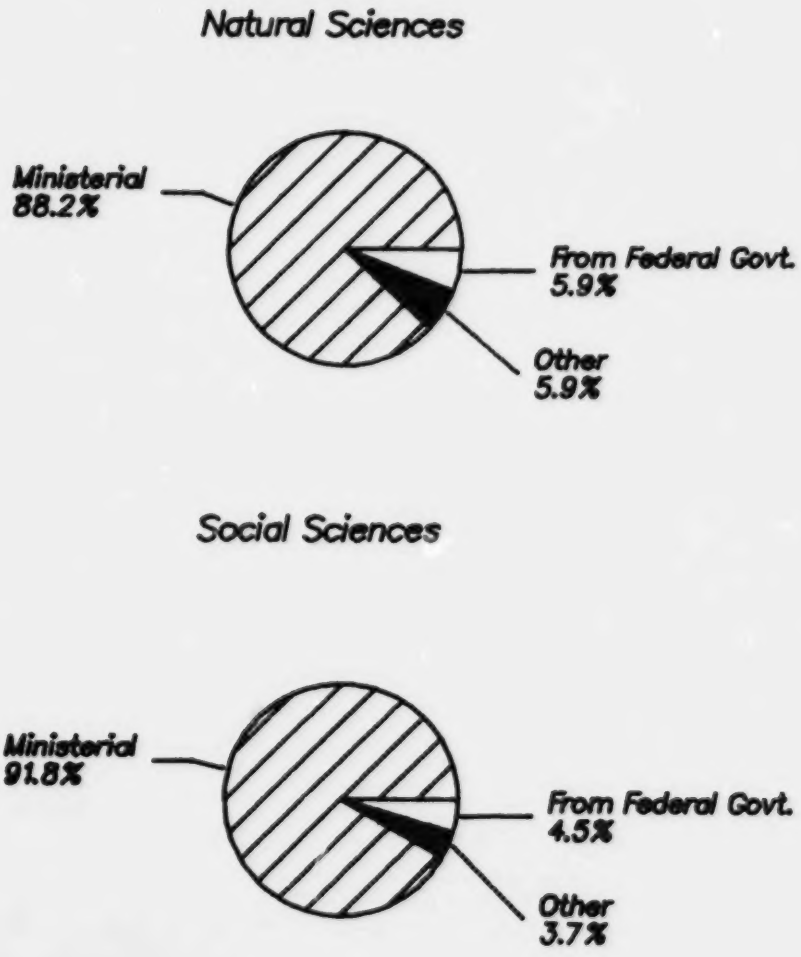


TABLE 8. Total Expenditures, by Activity and Performer, 1988-89

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other[1]	Total
	($'000)						
Research & development:							
Current expenditures:							
In-house	12,624	...	...	...	...	...	12,624
Contracts	355	733	787	-	-	3,609	5,484
Grants	...	9,470	6,968	245	2,125	4,057	22,865
Research fellowships	-	222	2,698	-	-	-	2,920
Administration of extramural R&D programs	1,203	...	...	...	...	...	1,203
Sub-total	14,182	10,425	10,453	245	2,125	7,666	45,096
Capital expenditures	424	...	...	...	...	...	424
Related scientific activities:							
Current expenditures	57,277	15,813	1,703	324	178	3,611	78,906
Administration of extramural RSA programs	1,202	...	...	...	...	...	1,202
Sub-total	58,479	15,813	1,703	324	178	3,611	80,108
Capital expenditures	2,611	...	...	...	...	...	2,611
Total	**75,696**	**26,238**	**12,156**	**569**	**2,303**	**11,277**	**128,239**

1 Includes only annual funding by Provincial Government.

Chart 4.

Total Expenditures on Scientific Activities, by Sector of Performance and Science Type, 1988–89

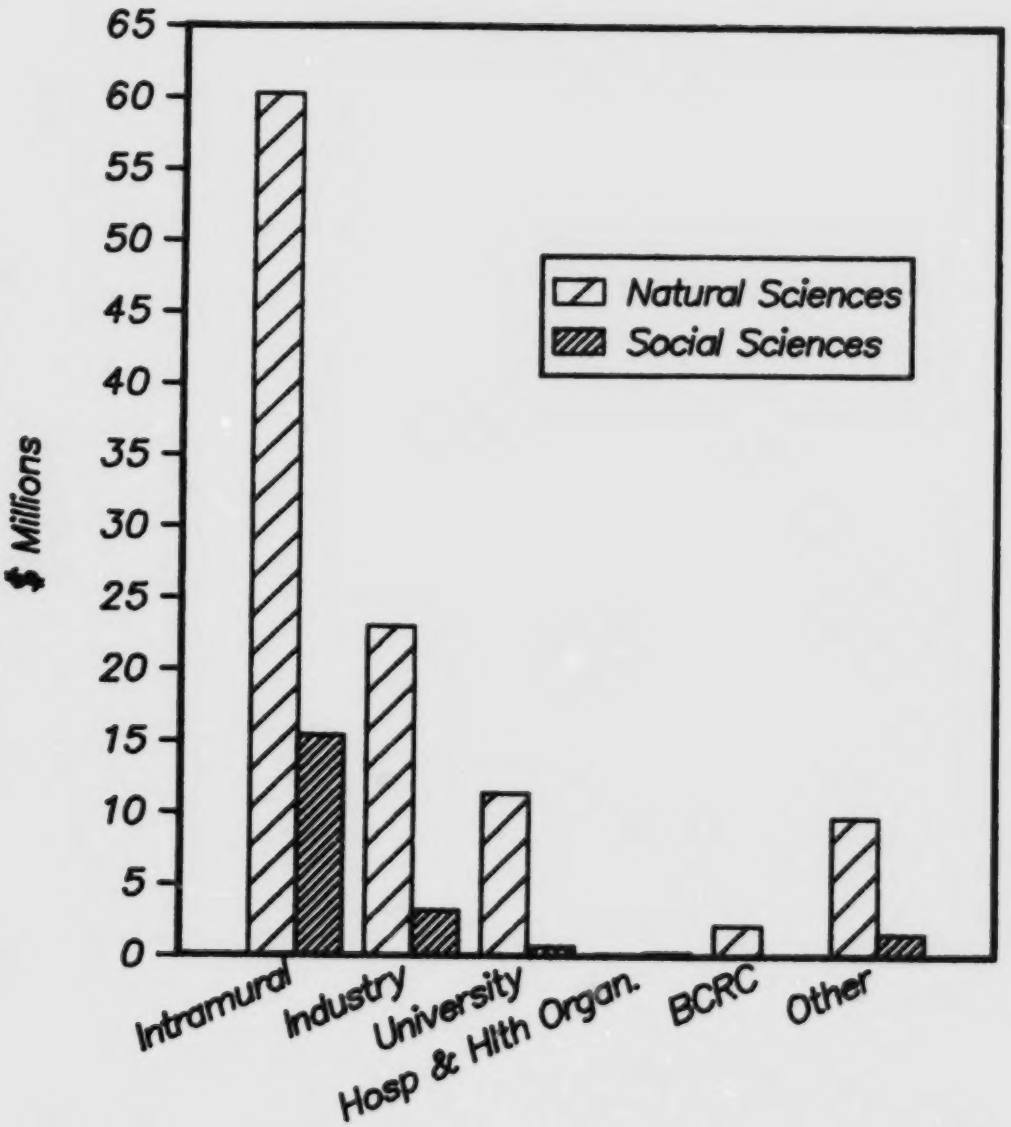


TABLE 9. Total Expenditures, by Ministry or Agency and Performer, 1988-89

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	1,018	6,115	3,335	-	1,520	5,511	17,499
Agriculture & Fisheries	4,389	2,336	733	-	-	8	7,466
Attorney General	146	-	-	-	-	476	622
Crown Lands	6,795	9,029	7	-	-	-	15,831
Education	650	340	-	-	-	45	1,035
Energy, Mines & Petroleum Resources	7,704	961	75	-	-	32	8,772
Environment	7,080	270	110	-	-	20	7,480
Finance & Corporate Affairs	1,590	-	-	-	-	-	1,590
Forests	26,482	2,921	673	-	750	3,603	34,429
Health	1,513	-	411	324	33	176	2,457
Health Care Research Foundation	208	35	4,639	245	-	-	5,127
Labour & Consumer Services	85	-	-	-	-	-	85
Municipal Affairs, Recreation & Culture	9,422	61	86	-	-	401	9,970
Native Affairs	2	12	-	-	-	-	14
Parks	785	-	-	-	-	-	785
Regional Development	3,718	2,095	153	-	-	306	6,272
Science Council of B.C.	738	1,557	1,934	-	-	699	4,928
Tourism & Provincial Secretary	3,353	504	-	-	-	-	3,857
Transportation & Highways	18	2	-	-	-	-	20
Total	**75,696**	**26,238**	**12,156**	**569**	**2,303**	**11,277**	**128,239**

1 Includes only annual funding by Provincial Government.

TABLE 10. Total Expenditures, by Ministry or Agency and Activity, 1988-89

Ministry or agency	Research & development			Related scientific activities			Total
	Current	AEP[1]	Capital	Current	AEP[1]	Capital	
	($000)						
Advanced Education & Job Training	13,867	130	-	3,319	183	-	17,499
Agriculture & Fisheries	1,382	51	-	5,727	306	-	7,466
Attorney General	-	-	-	622	-	-	622
Crown Lands	411	-	230	14,410	280	500	15,831
Education	-	-	-	1,035	-	-	1,035
Energy, Mines & Petroleum Resources	115	-	-	8,515	6	136	8,772
Environment	1,486	-	-	5,929	-	65	7,480
Finance & Corporate Affairs	-	-	-	1,504	-	86	1,590
Forests	17,898	379	104	14,868	-	1,180	34,429
Health	221	-	-	2,216	-	20	2,457
Health Care Research Foundation	4,919	208	-	-	-	-	5,127
Labour & Consumer Services	-	-	-	85	-	-	85
Municipal Affairs, Recreation & Culture	86	25	-	9,784	75	-	9,970
Native Affairs	-	-	-	12	2	-	14
Parks	-	-	-	785	-	-	785
Regional Development	-	-	-	5,574	128	570	6,272
Science Council of B.C.	3,491	410	90	907	-	30	4,928
Tourism & Provincial Secretary	-	-	-	3,611	222	24	3,857
Transportation & Highways	17	-	-	3	-	-	20
Total	**43,893**	**1,203**	**424**	**78,906**	**1,202**	**2,611**	**128,239**

1 Administration of extramural programs

TABLE 11. Total Expenditures on R&D, by Ministry or Agency and Performer, 1988-89

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	130	6,000	2,500	-	1,375	3,992	13,997
Agriculture & Fisheries	359	542	532	-	-	-	1,433
Attorney General	-	-	-	-	-	-	-
Crown Lands	610	24	7	-	-	-	641
Education	-	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	115	-	-	-	-	115
Environment	1,204	200	82	-	-	-	1,486
Finance & Corporate Affairs	-	-	-	-	-	-	-
Forests	11,405	1,950	673	-	750	3,603	18,381
Health	150	-	-	-	-	71	221
Health Care Research Foundation	208	35	4,639	245	-	-	5,127
Labour & Consumer Services	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	25	-	86	-	-	-	111
Native Affairs	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Regional Development	-	-	-	-	-	-	-
Science Council of B.C.	500	1,557	1,934	-	-	-	3,991
Tourism & Provincial Secretary	-	-	-	-	-	-	-
Transportation & Highways	15	2	-	-	-	-	17
Total	**14,606**	**10,425**	**10,453**	**245**	**2,125**	**7,666**	**45,520**

1 Includes only annual funding by Provincial Government.

TABLE 12. Detail of Intramural Expenditures, by Ministry or Agency, 1988-89

Ministry or agency	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	($'000)			
Advanced Education & Job Training	582	436	-	1,018
Agriculture & Fisheries	2,858	1,531	-	4,389
Attorney General	120	26	-	146
Crown Lands	4,359	1,706	730	6,795
Education	420	230	-	650
Energy, Mines & Petroleum Resources	3,262	4,306	136	7,704
Environment	3,560	3,455	65	7,080
Finance & Corporate Affairs	982	522	86	1,590
Forests	13,438	11,760	1,284	26,482
Health	1,110	383	20	1,513
Health Care Research Foundation	-	208	-	208
Labour & Consumer Services	75	10	-	85
Municipal Affairs, Recreation & Culture	5,378	4,044	-	9,422
Native Affairs	1	1	-	2
Parks	293	492	-	785
Regional Development	2,634	514	570	3,718
Science Council of B.C.	358	260	120	738
Tourism & Provincial Secretary	1,571	1,758	24	3,353
Transportation & Highways	10	8	-	18
Total	**41,011**	**31,650**	**3,035**	**75,696**

TABLE 13. Ministerial Personnel Engaged in Scientific Activities, by Ministry or Agency, Activity and Category, 1988-89

Ministry or agency	Research & development				Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ...	-	-	-	-	6	2	3	11
Agriculture & Fisheries	1	1	-	2	45	20	4	69
Attorney General	-	-	-	-	3	-	-	3
Crown Lands	3	4	-	7	8	64	13	85
Education	-	-	-	-	2	6	1	9
Energy, Mines & Petroleum Resources .	-	-	-	-	56	9	9	74
Environment	19	5	1	25	36	39	7	82
Finance & Corporate Affairs	-	-	-	-	20	-	2	22
Forests	82	68	27	177	50	83	24	157
Health	4	-	1	5	16	8	2	26
Health Care Research Foundation[1]	-	-	-	-	-	-	-	-
Labour & Consumer Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	-	-	-	51	47	26	124
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	6	3	-	9
Regional Development	-	-	-	-	53	5	17	75
Science Council of B.C.	-	-	-	-	2	-	2	4
Tourism & Provincial Secretary	-	-	-	-	19	7	17	43
Transportation & Highways	-	-	-	-	-	-	-	-
Total	**109**	**78**	**29**	**216**	**374**	**294**	**127**	**795**

1 Administrative personnel included with Science Council of B.C.

TABLE 13. Ministerial Personnel Engaged in Scientific Activities, by Ministry or Agency, Activity and Category, 1988-89

Ministry or agency	Administration of extramural programs				Total			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	3	-	2	5	9	2	5	16
Agriculture & Fisheries	4	-	-	4	50	21	4	75
Attorney General	-	-	-	-	3	-	-	3
Crown Lands	-	8	-	8	11	76	13	100
Education	-	-	-	-	2	6	1	9
Energy, Mines & Petroleum Resources	-	-	-	-	56	9	9	74
Environment	-	-	-	-	55	44	8	107
Finance & Corporate Affairs	-	-	-	-	20	-	2	22
Forests	7	-	2	9	139	151	53	343
Health	-	-	-	-	20	8	3	31
Health Care Research Foundation[1]	-	-	-	-	-	-	-	-
Labour & Consumer Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	2	-	2	51	49	26	126
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	6	3	-	9
Regional Development	4	1	-	5	57	6	17	80
Science Council of B.C.	4	-	3	7	6	-	5	11
Tourism & Provincial Secretary	2	-	2	4	21	7	19	47
Transportation & Highways	-	-	-	-	-	-	-	-
Total	**24**	**11**	**9**	**44**	**507**	**383**	**165**	**1,055**

1 Administrative personnel included with Science Council of B.C.

Chart 5.

Ministerial Personnel Engaged in Scientific Activities, by Category and Science Type, 1988–89

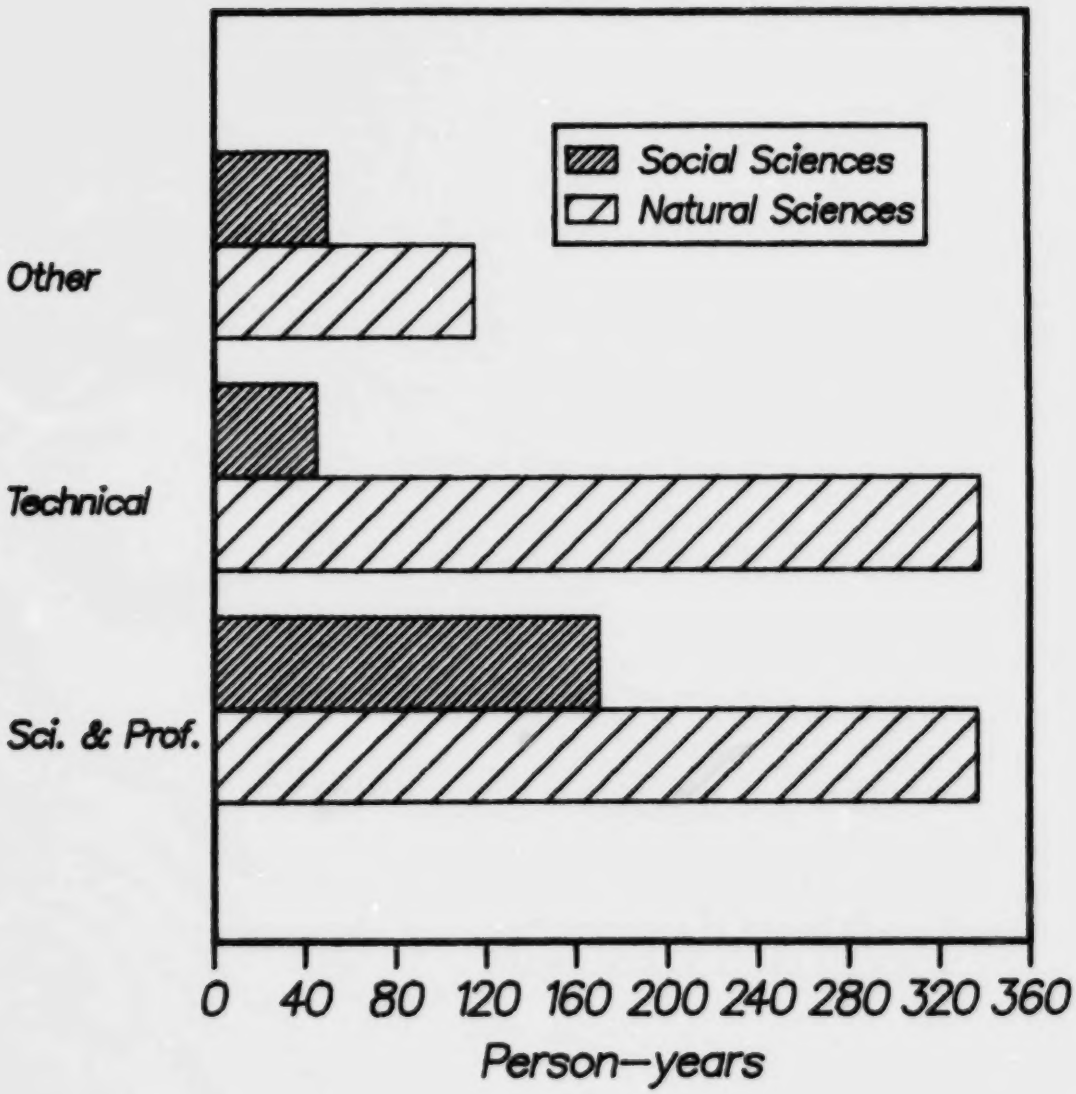


TABLE 14. Objectives of Expenditures, by Ministry or Agency, 1988-89

Ministry or agency	Advancement of Science	Communications	Energy & fuels	
			Fossil fuels	Other
	($'000)			
Advanced Education & Job Training	2,045	1,858	-	548
Agriculture & Fisheries	-	-	-	-
Attorney General	-	-	-	-
Crown Lands	-	-	-	-
Education	-	125	-	-
Energy, Mines & Petroleum Resources	-	-	-	-
Environment	260	-	-	-
Finance & Corporate Affairs	-	12	12	-
Forests	-	-	-	-
Health	-	-	-	-
Health Care Research Foundation	-	-	-	-
Labour & Consumer Services	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-
Native Affairs	-	-	-	-
Parks	-	-	-	-
Regional Development	74	265	-	125
Science Council of B.C.	-	676	198	85
Tourism & Provincial Secretary	-	-	-	-
Transportation & Highways	-	-	-	-
**Total	**2,379**	**2,936**	**210**	**758**

TABLE 14. Objectives of Expenditures, by Ministry or Agency, 1988-89 - Continued

Ministry or agency	Environmental issues				Health
	Air	Land	Water	Other	
	($'000)				
Advanced Education & Job Training	-	-	-	-	3,468
Agriculture & Fisheries	-	-	-	-	-
Attorney General	-	-	-	-	-
Crown Lands	-	9,526	6,305	-	-
Education	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	180	-	32
Environment	1,599	700	1,042	395	-
Finance & Corporate Affairs	-	-	-	-	47
Forests	-	-	-	100	-
Health	-	75	-	48	2,334
Health Care Research Foundation	-	-	-	-	5,127
Labour & Consumer Services	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-
Native Affairs	-	-	-	-	-
Parks	-	-	-	-	-
Regional Development	-	-	-	226	62
Science Council of B.C.	-	-	-	170	-
Tourism & Provincial Secretary	-	-	-	-	-
Transportation & Highways	-	-	-	-	-
Total	**1,599**	**10,301**	**7,527**	**939**	**11,070**

TABLE 14. Objectives of Expenditures, by Ministry or Agency, 1988-89 - Continued

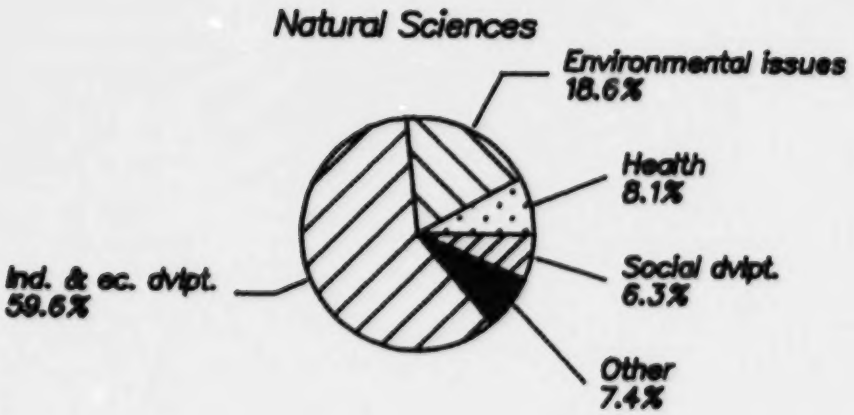
Ministry or agency	Industrial & economic development					
	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	($'000)					
Advanced Education & Job Training ..	324	753	841	2,249	812	4,032
Agriculture & Fisheries	6,232	1,234	-	-	-	-
Attorney General	-	-	-	-	-	-
Crown Lands	-	-	-	-	-	-
Education	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	8,560	-
Environment	-	1,280	-	-	-	-
Finance & Corporate Affairs	12	-	24	24	-	950
Forests	-	-	34,329	-	-	-
Health	-	-	-	-	-	-
Health Care Research Foundation	-	-	-	-	-	-
Labour & Consumer Services	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-
Native Affairs	-	-	-	-	-	-
Parks	-	-	-	-	-	-
Regional Development	77	334	877	1,809	438	955
Science Council of B.C.	326	689	601	507	253	724
Tourism & Provincial Secretary	-	-	-	-	-	-
Transportation & Highways	-	-	-	-	-	-
Total	**6,971**	**4,290**	**36,672**	**4,589**	**10,063**	**6,661**

TABLE 14. Objectives of Expenditures, by Ministry or Agency, 1988-89 - Concluded

Ministry or agency	Social development					Transportation	Wildlife	Other	Total
	Culture, sport & recreation	Education	Human resources	Urban & regional studies	Other				
	($'000)								
Advanced Education & Job Training ..	-	523	-	-	46	-	-	-	17,499
Agriculture & Fisheries	-	-	-	-	-	-	-	-	7,466
Attorney General	-	-	-	-	622	-	-	-	622
Crown Lands	-	-	-	-	-	-	-	-	15,831
Education	-	910	-	-	-	-	-	-	1,035
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	-	-	8,772
Environment	55	-	-	-	-	-	2,149	-	7,480
Finance & Corporate Affairs	-	23	23	-	439	24	-	-	1,590
Forests	-	-	-	-	-	-	-	-	34,429
Health	-	-	-	-	-	-	-	-	2,457
Health Care Research Foundation	-	-	-	-	-	-	-	-	5,127
Labour & Consumer Services	-	-	80	-	5	-	-	-	85
Municipal Affairs, Recreation & Culture	8,633	393	-	585	-	-	-	359	9,970
Native Affairs	14	-	-	-	-	-	-	-	14
Parks	785	-	-	-	-	-	-	-	785
Regional Development	378	-	112	464	-	-	-	76	6,272
Science Council of B.C.	-	67	-	-	526	-	-	106	4,928
Tourism & Provincial Secretary	3,857	-	-	-	-	-	-	-	3,857
Transportation & Highways	-	-	-	-	-	20	-	-	20
**Total ..... **	**13,722**	**1,916**	**215**	**1,049**	**1,638**	**44**	**2,149**	**541**	**128,239**

Chart 6.

Objectives of Total Expenditures on Scientific Activities, by Science Type, 1988–89



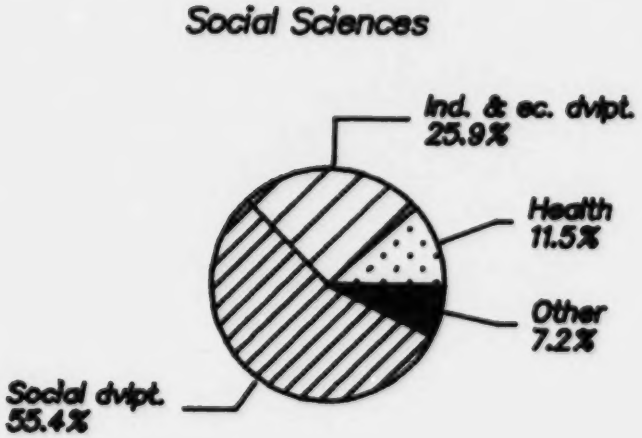


TABLE 15. Objectives of Science Expenditures, by Activity, 1988-89

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
	($'000)				
Advancement of science	130	901	-	1,348	2,379
Communications	80	162	2,416	278	2,936
Energy & fuels:					
Fossil fuels	23	23	164	-	210
Other	10	79	618	51	758
Environmental issues:					
Air	2	1,555	-	42	1,599
Land	305	3,885	31	6,080	10,301
Water	305	4,001	115	3,106	7,527
Other	60	284	424	171	939
Health	358	1,447	8,458	807	11,070
Industrial & economic development:					
Agriculture	41	3,996	1,108	1,826	6,971
Fisheries	968	957	1,881	484	4,290
Forestry	11,476	15,655	8,229	1,312	36,672
Manufacturing	60	1,223	2,668	638	4,589
Minerals	30	7,978	1,021	1,034	10,063
Other	86	1,563	3,611	1,401	6,661
Social development:					
Culture, sport & recreation	-	13,051	-	671	13,722
Education	25	1,061	59	771	1,916
Human resources	-	215	-	-	215
Urban & regional studies	-	590	27	432	1,049
Other	-	598	-	1,040	1,638
Transportation	15	27	2	-	44
Wildlife	632	1,430	82	5	2,149
Other	-	409	-	132	541
Total	**14,606**	**61,090**	**30,914**	**21,629**	**128,239**

TABLE 16. Total Expenditures, by Activity and Performer, 1989-90

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Research & development:							
Current expenditures:							
In-house	13,886	...	...	...	...	...	13,886
Contracts	365	1,366	808	-	-	4,212	6,751
Grants	...	16,450	10,959	1,000	2,375	4,305	35,089
Research fellowships	-	350	3,271	-	-	22	3,643
Administration of extramural R&D programs	1,576	...	...	...	...	...	1,576
Sub-total	15,827	18,166	15,038	1,000	2,375	8,539	60,945
Capital expenditures	1,112	...	...	...	...	...	1,112
Related scientific activities:							
Current expenditures	62,286	17,304	1,561	82	283	4,613	86,129
Administration of extramural RSA programs	1,172	...	...	...	...	...	1,172
Sub-total	63,458	17,304	1,561	82	283	4,613	87,301
Capital expenditures	2,436	...	...	...	...	...	2,436
Total	**82,833**	**35,470**	**16,599**	**1,082**	**2,658**	**13,152**	**151,794**

1 Includes only annual funding by Provincial Government.

Table 17. Total Expenditures, by Ministry or Agency and Performer, 1989-90[e]

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	1,491	6,124	3,398	500	1,780	5,742	19,035
Agriculture & Fisheries	4,540	3,548	594	-	-	61	8,743
Attorney General	160	-	-	-	-	500	660
Crown Lands	7,465	11,073	20	-	-	-	18,558
Education	750	360	20	-	-	50	1,180
Energy, Mines & Petroleum Resources	7,256	777	77	-	-	371	8,481
Environment	7,307	265	90	-	-	5	7,667
Finance & Corporate Affairs	2,492	-	-	-	-	-	2,492
Forests	27,349	2,289	680	-	450	4,141	34,909
Health	1,563	-	380	82	28	50	2,103
Health Care Research Foundation	250	-	5,750	500	-	-	6,500
Labour & Consumer Services	85	-	-	-	-	-	85
Municipal Affairs, Recreation & Culture	11,479	95	90	-	-	422	12,086
Native Affairs	1	4	-	-	-	-	5
Parks	910	-	-	-	-	-	910
Regional Development	4,010	1,700	150	-	100	200	6,160
Science Council of B.C.	830	8,850	5,350	-	300	1,610	16,940
Tourism & Provincial Secretary	4,474	383	-	-	-	-	4,857
Transportation & Highways	421	2	-	-	-	-	423
Total	**82,833**	**35,470**	**16,599**	**1,082**	**2,658**	**13,152**	**151,794**

1 Includes only annual funding by Provincial Government.

TABLE 18. Total Expenditures, by Ministry or Agency and Activity, 1989-90[e]

Ministry or agency	Research & development			Related scientific activities			Total
	Current	AEP[1]	Capital	Current	AEP[1]	Capital	
	($000)						
Advanced Education & Job Training ..	14,690	250	-	3,862	233	-	19,035
Agriculture & Fisheries	1,468	53	-	6,892	330	-	8,743
Attorney General	-	-	-	660	-	-	660
Crown Lands	1,120	-	50	16,353	250	785	18,558
Education	-	-	-	1,180	-	-	1,180
Energy, Mines & Petroleum Resources	-	-	-	8,260	5	216	8,481
Environment	1,490	-	-	6,145	-	32	7,667
Finance & Corporate Affairs	-	-	-	2,346	-	146	2,492
Forests	19,153	398	1,062	13,569	-	727	34,909
Health	250	-	-	1,823	-	30	2,103
Health Care Research Foundation	6,250	250	-	-	-	-	6,500
Labour & Consumer Services	-	-	-	85	-	-	85
Municipal Affairs, Recreation & Culture	112	25	-	11,874	75	-	12,086
Native Affairs	-	-	-	4	1	-	5
Parks	-	-	-	910	-	-	910
Regional Development	-	-	-	5,550	110	500	6,160
Science Council of B.C.	14,700	600	-	1,640	-	-	16,940
Tourism & Provincial Secretary	-	-	-	4,689	168	-	4,857
Transportation & Highways	136	-	-	287	-	-	423
**Total	**59,369**	**1,576**	**1,112**	**86,129**	**1,172**	**2,436**	**131,794**

1 Administration of extramural programs

TABLE 19. Total Expenditures on R&D, by Ministry or Agency and Performer, 1989-90*

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training ..	250	6,000	2,500	500	1,625	4,065	14,940
Agriculture & Fisheries	378	514	568	-	-	61	1,521
Attorney General	-	-	-	-	-	-	-
Crown Lands	550	600	20	-	-	-	1,170
Education	-	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	-
Environment	1,210	200	80	-	-	-	1,490
Finance & Corporate Affairs	-	-	-	-	-	-	-
Forests	13,342	2,000	680	-	450	4,141	20,613
Health	200	-	-	-	-	50	250
Health Care Research Foundation	250	-	5,750	500	-	-	6,500
Labour & Consumer Services	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	25	-	90	-	-	22	137
Native Affairs	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Regional Development	-	-	-	-	-	-	-
Science Council of B.C.	600	8,850	5,350	-	300	200	15,300
Tourism & Provincial Secretary	-	-	-	-	-	-	-
Transportation & Highways	134	2	-	-	-	-	136
**Total	**16,939**	**18,166**	**15,038**	**1,000**	**2,375**	**8,539**	**62,057**

1 Includes only annual funding by Provincial Government.

TABLE 20. Ministerial Personnel Engaged in Scientific Activities, by Ministry or Agency, Activity and Category, 1989-90*

Ministry or agency	Research & development				Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	-	-	-	-	9	2	3	14
Agriculture & Fisheries	1	1	-	2	45	20	4	69
Attorney General	-	-	-	-	3	-	-	3
Crown Lands	5	4	-	9	11	59	13	83
Education	-	-	-	-	3	8	-	11
Energy, Mines & Petroleum Resources	-	-	-	-	88	13	18	119
Environment	17	4	1	22	33	40	7	80
Finance & Corporate Affairs	-	-	-	-	28	-	3	31
Forests	85	71	28	184	53	69	23	145
Health	4	-	1	5	16	8	2	26
Health Care Research Foundation[1] ...	-	-	-	-	-	-	-	-
Labour & Consumer Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	-	-	-	52	49	27	128
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	6	3	-	9
Regional Development	-	-	-	-	55	5	15	75
Science Council of B.C.	-	-	-	-	2	-	4	6
Tourism & Provincial Secretary	-	-	-	-	29	12	23	64
Transportation & Highways	1	1	-	2	2	1	-	3
Total	**113**	**81**	**30**	**224**	**436**	**290**	**142**	**868**

1 Administrative personnel included with Science Council of B.C.

TABLE 20. Ministerial Personnel Engaged in Scientific Activities, by Ministry or Agency, Activity and Category, 1989-90

Ministry or agency	Administration of extramural programs				Total			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training	6	-	2	8	15	2	5	22
Agriculture & Fisheries	3	-	-	3	49	21	4	74
Attorney General	-	-	-	-	3	-	-	3
Crown Lands	-	8	-	8	16	71	13	100
Education	-	-	-	-	3	8	-	11
Energy, Mines & Petroleum Resources	-	-	-	-	88	13	18	119
Environment	-	-	-	-	50	44	8	102
Finance & Corporate Affairs	-	-	-	-	28	-	3	31
Forests	7	-	2	9	145	140	53	338
Health	-	-	-	-	20	8	3	31
Health Care Research Foundation[1]	-	-	-	-	-	-	-	-
Labour & Consumer Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	2	-	2	52	51	27	130
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	6	3	-	9
Regional Development	5	-	-	5	60	5	15	80
Science Council of B.C.	5	-	4	9	7	-	8	15
Tourism & Provincial Secretary	2	-	2	4	31	12	25	68
Transportation & Highways	-	-	-	-	3	2	-	5
Total	**28**	**10**	**10**	**48**	**577**	**381**	**182**	**1,140**

1 Administrative personnel included with Science Council of B.C.

TABLE 21. Objectives of Expenditures, by Ministry or Agency, 1989-90[a]

Ministry or agency	Advancement of Science	Communications	Energy & fuels	
			Fossil fuels	Other
	($'000)			
Advanced Education & Job Training ..	2,530	1,961	-	549
Agriculture & Fisheries	-	-	-	-
Attorney General	-	-	-	-
Crown Lands	-	-	-	-
Education	-	225	-	-
Energy, Mines & Petroleum Resources	-	-	-	-
Environment	240	-	-	-
Finance & Corporate Affairs	-	12	12	-
Forests	-	-	-	-
Health	-	-	-	-
Health Care Research Foundation	-	-	-	-
Labour & Consumer Services	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-
Native Affairs	-	-	-	-
Parks	-	-	-	-
Regional Development	80	250	-	123
Science Council of B.C.	-	2,485	1,041	-
Tourism & Provincial Secretary	-	-	-	-
Transportation & Highways	-	-	-	-
**Total	**2,850**	**4,933**	**1,053**	**672**

TABLE 21. Objectives of Expenditures, by Ministry or Agency, 1989-90[e] - Continued

Ministry or agency	Environmental Issues				Health
	Air	Land	Water	Other	
	($'000)				
Advanced Education & Job Training	-	-	-	-	3,478
Agriculture & Fisheries	-	-	-	-	-
Attorney General	-	-	-	-	-
Crown Lands	-	14,158	4,400	-	-
Education	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	306	-	-
Environment	1,650	800	1,092	435	-
Finance & Corporate Affairs	-	-	-	-	50
Forests	175	-	-	125	-
Health	-	50	-	50	2,003
Health Care Research Foundation	-	-	-	-	6,500
Labour & Consumer Services	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-
Native Affairs	-	-	-	-	-
Parks	-	-	-	-	-
Regional Development	-	-	-	226	61
Science Council of B.C.	-	-	-	621	-
Tourism & Provincial Secretary	-	-	-	-	-
Transportation & Highways	-	-	-	-	-
Total	**1,825**	**15,008**	**5,798**	**1,457**	**12,092**

TABLE 21. Objectives of Expenditures, by Ministry or Agency, 1989-90[e] - Continued

Ministry or agency	Industrial & economic development					
	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	($'000)					
Advanced Education & Job Training ..	325	657	843	2,501	739	4,790
Agriculture & Fisheries	7,853	890	-	-	-	-
Attorney General	-	-	-	-	-	-
Crown Lands	-	-	-	-	-	-
Education	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	8,175	-
Environment	-	1,280	-	-	-	-
Finance & Corporate Affairs	12	-	25	25	-	957
Forests	-	-	34,609	-	-	-
Health	-	-	-	-	-	-
Health Care Research Foundation	-	-	-	-	-	-
Labour & Consumer Services	—	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-
Native Affairs	-	-	-	-	-	-
Parks	-	-	-	-	-	-
Regional Development	65	306	861	1,800	430	939
Science Council of B.C.	1,196	2,531	2,205	1,864	932	2,655
Tourism & Provincial Secretary	-	-	-	-	-	-
Transportation & Highways	-	-	-	-	-	-
Total	**9,451**	**5,664**	**38,543**	**6,190**	**10,276**	**9,341**

TABLE 21. Objectives of Expenditures, by Ministry or Agency, 1989-90[e] - Concluded

Ministry or agency	Social development					Transportation	Wildlife	Other	Total
	Culture, sport & recreation	Education	Human resources	Urban & regional studies	Other				
	($'000)								
Advanced Education & Job Training .	-	607	-	-	55	-	-	-	19,035
Agriculture & Fisheries	-	-	-	-	-	-	-	-	8,743
Attorney General	-	-	-	-	660	-	-	-	660
Crown Lands	-	-	-	-	-	-	-	-	18,558
Education	-	955	-	-	-	-	-	-	1,180
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	-	-	8,481
Environment	25	-	-	-	-	-	2,145	-	7,667
Finance & Corporate Affairs	-	25	25	-	1,324	25	-	-	2,492
Forests	-	-	-	-	-	-	-	-	34,909
Health	-	-	-	-	-	-	-	-	2,103
Health Care Research Foundation ...	-	-	-	-	-	-	-	-	6,500
Labour & Consumer Services	-	-	80	-	5	-	-	-	85
Municipal Affairs, Recreation & Culture	10,667	409	-	651	-	-	-	359	12,086
Native Affairs	5	-	-	-	-	-	-	-	5
Parks	910	-	-	-	-	-	-	-	910
Regional Development	370	-	121	452	-	-	-	76	6,160
Science Council of B.C.	-	100	-	-	1,200	-	-	110	16,940
Tourism & Provincial Secretary	4,857	-	-	-	-	-	-	-	4,857
Transportation & Highways	-	-	-	-	-	423	-	-	423
Total	**16,834**	**2,096**	**226**	**1,103**	**3,244**	**448**	**2,145**	**545**	**131,794**

TABLE 22. Objectives of Expenditures, by Activity, 1989-90[e]

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
	($'000)				
Advancement of science	250	1,178	-	1,422	2,850
Communications	96	270	4,313	254	4,933
Energy & fuels:					
Fossil fuels	41	27	985	-	1,053
Other	-	80	549	43	672
Environmental issues:					
Air	185	1,600	-	40	1,825
Land	350	5,715	420	8,523	15,008
Water	200	3,092	200	2,306	5,798
Other	64	330	913	150	1,457
Health	450	1,453	9,778	411	12,092
Industrial & economic development:					
Agriculture	55	4,125	2,243	3,028	9,451
Fisheries	997	966	3,410	291	5,664
Forestry	13,252	14,626	10,076	589	38,543
Manufacturing	72	1,316	4,265	537	6,190
Minerals	36	7,550	1,621	1,069	10,276
Other	102	1,613	6,151	1,475	9,341
Social development:					
Culture, sport & recreation	-	16,307	-	527	16,834
Education	25	1,118	84	869	2,096
Human resources	-	226	-	-	226
Urban & regional studies	-	643	28	432	1,103
Other	-	1,504	-	1,740	3,244
Transportation	134	312	2	-	448
Wildlife	630	1,430	80	5	2,145
Other	-	413	-	132	545
Total	**16,939**	**65,894**	**45,118**	**23,843**	**151,794**

Natural Sciences

TABLE 23. Total Expenditures in the Natural Sciences, by Activity, 1982-83 to 1989-90

Activity	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Research & development:								
Current Expenditures:								
In-house	12,297	11,197	10,334	12,207	13,337	13,012	12,474	13,686
Contracts	1,684	1,557	2,594	2,806	3,536	4,332	5,478	6,741
Grants	7,679	7,591	5,830	8,813	6,993	12,670	22,714	34,959
Research fellowships	1,070	1,042	1,218	1,251	1,395	1,108	2,920	3,621
Administration of extramural R&D programs	...	...	...	...	...	966	1,178	1,551
Sub-total	22,730	21,387	19,976	25,077	25,261	32,088	44,764	60,558
Capital Expenditures	444	193	204	412	845	609	424	1,112
Related scientific activities:								
Current Expenditures:								
Education support	166	172	40	55	17	382	1,220	1,291
Technical surveys	25,161	24,089	23,406	25,609	33,313	40,512	40,366	42,148
Information services	3,441	3,058	2,267	2,561	3,164	3,668	5,507	10,447
Special services & studies	4,181	6,228	2,279	4,322	4,109	4,450	7,151	3,794
Museum services	891	517	1,643	5,386	5,534	5,083	4,986	6,156
Administration of extramural RSA programs	...	...	...	...	...	335	658	693
Sub-total	33,840	34,064	29,635	37,933	46,137	54,430	59,888	64,529
Capital expenditures	383	170	291	335	1,155	2,456	1,911	1,750
Total	**57,397**	**55,814**	**50,106**	**63,757**	**73,398**	**89,583**	**106,987**	**127,949**

TABLE 24. Total Expenditures in the Natural Sciences, by Ministry or Agency, 1982-83 to 1989-90

Ministry or agency	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Advanced Education & Job Training	...	...	...	...	...	4,049	16,514	17,848
Agriculture & Fisheries	...	...	...	...	...	4,646	7,466	8,743
Agriculture & Food	1,760	1,996	1,717	2,945	3,301	...	...	...
Crown Lands	...	...	...	...	...	...	15,831	18,558
Energy, Mines & Petroleum Resources	4,637	7,214	2,355	3,830	6,358	8,096	8,772	8,481
Environment	20,456	17,546	18,577	18,680	22,591	...	7,370	7,582
Environment & Parks	...	...	...	...	...	27,371	...	...
Forests	19,269	18,416	17,164	21,018	24,188	...	34,429	34,909
Forests & Lands	...	...	...	...	...	30,124	...	...
Health	25	146	85	245	100	-	-	-
Health Care Research Foundation	3,372	3,532	3,611	3,578	3,574	4,970	5,127	6,500
International Trade, Science & Investment	...	...	...	3,705	2,494	...	...	...
Lands, Parks & Housing	321	298	362	...	222	...	...	...
Municipal Affairs	...	...	...	...	355	335	...	...
Municipal Affairs, Recreation & Culture	...	...	...	...	...	...	5,947	7,257
Parks	...	...	...	...	...	...	583	708
Postsecondary Education	...	...	...	-	15	...	...	...
Provincial Secretary & Government Services	1,390	950	1,710	5,781	6,210	-	...	...
Science Council of B.C.	4,209	4,002	3,450	3,800	3,800	4,156	4,928	16,940
Tourism, Recreation & Culture	...	...	...	...	...	5,701	...	...
Transportation & Highways	173	150	175	175	190	135	20	423
Universities, Science & Communications	1,785	1,564	900	...	...	...	...	...
Total	**57,397**	**55,814**	**50,106**	**63,757**	**73,398**	**89,583**	**106,987**	**127,949**

TABLE 25. Total Expenditures in the Natural Sciences, by Performer, 1982-83 to 1989-90

Performer	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Intramural	43,187	38,605	37,069	47,481	54,166	61,680	60,280	64,106
Industry	5,855	9,057	5,048	4,814	8,260	13,874	23,111	32,804
Universities	5,270	5,204	5,306	5,947	6,402	8,844	11,432	15,869
Hospitals & health organizations	203	290	162	2,260[2]	403	341	245	1,000
B.C. Research Council[1]	1,789	1,586	944	1,015	1,290	1,724	2,250	2,500
Other	1,093	1,072	1,577	2,240	2,877	3,120	9,669	11,670
**Total	**57,397**	**55,814**	**50,106**	**63,757**	**73,398**	**89,583**	**106,987**	**127,949**

1 Includes only annual funding by Provincial Government.
2 Includes a $2.0 million grant to the Biomedical Processing Centre.

TABLE 26. Total Expenditures on R&D in the Natural Sciences, by Performer, 1982-83 to 1989-90

Performer	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Intramural	13,265	11,863	10,817	12,968	14,300	14,816	14,431	16,714
Industry	2,299	2,238	2,016	2,254	2,223	5,300	10,425	18,166
Universities	5,270	5,204	5,303	5,397	5,699	7,696	10,367	14,948
Hospitals & health organizations	203	290	162	2,260[2]	403	341	245	1,000
B.C. Research Council[1]	1,227	1,147	594	515	790	1,599	2,125	2,375
Other	910	838	1,288	2,095	2,691	2,945	7,595	8,467
**Total	**23,174**	**21,580**	**20,180**	**25,489**	**26,106**	**32,697**	**45,188**	**61,670**

1 Includes only annual funding by Provincial Government.
2 Includes a $2.0 million grant to the Biomedical Processing Centre.

TABLE 27. Total Expenditures on R&D in the Natural Sciences, by Ministry or Agency, 1982-83 to 1989-90

Ministry or agency	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Advanced Education & Job Training	...	...	...	...	...	2,875	13,997	14,940
Agriculture & Fisheries	...	...	...	...	...	1,313	1,433	1,521
Agriculture & Food	577	695	345	150	486	...	...	...
Crown Lands	...	...	...	...	...	...	641	1,170
Energy, Mines & Petroleum Resources	1,290	1,393	866	1,003	200	-	115	-
Environment	2,284	1,809	1,752	2,087	2,069	...	1,486	1,490
Environment & Parks	...	...	...	...	...	1,820	...	...
Forests	9,866	8,688	9,481	11,915	14,563	...	18,381	20,613
Forests & Lands	...	...	...	...	...	17,438	...	...
Health	5	103	70	225	95	-	-	-
Health Care Research Foundation	3,372	3,532	3,611	3,578	3,574	4,970	5,127	6,500
International Trade, Science & Investment	...	...	...	2,676	1,249	...	...	...
Lands, Parks & Housing	5	-	-	...	-	...	...	...
Municipal Affairs	...	...	...	...	-	-	...	...
Municipal Affairs, Recreation & Culture	...	...	...	...	...	...	-	-
Parks	...	...	...	...	...	...	-	-
Postsecondary Education	...	...	...	-	15	...	...	...
Provincial Secretary & Government Services	410	320	-	-	-	-	...	...
Science Council of B.C.	4,209	3,890	3,450	3,800	3,800	4,156	3,991	15,300
Tourism, Recreation & Culture	...	...	...	...	...	-	...	...
Transportation & Highways	48	40	55	55	55	125	17	136
Universities, Science & Communications	1,108	1,110	550	...	...	...	...	...
Total	**23,174**	**21,580**	**20,180**	**25,489**	**26,106**	**32,697**	**45,188**	**61,670**

TABLE 28. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Activity and Category, 1982-83 to 1989-90

Activity and category	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	(person-years)							
Research & development:								
Scientific & professional	147	135	114	118	119	117	105	109
Technical	135	115	106	97	90	82	78	81
Other	40	40	40	42	38	29	28	29
Sub-total	322	290	260	257	247	228	211	219
Related scientific activities:								
Scientific & professional	203	198	167	214	226	240	216	255
Technical	444	396	302	323	320	320	252	240
Other	122	120	96	112	115	113	80	90
Sub-total	769	714	565	649	661	673	548	585
Administration of extramural programs:								
Scientific & professional	...	...	...	...	...	8	16	19
Technical	...	...	...	...	...	7	8	8
Other	...	...	...	...	...	9	7	8
Sub-total	...	...	...	...	...	24	31	35
Total science activities:								
Scientific & professional	350	333	281	332	345	365	337	383
Technical	579	511	408	420	410	409	338	329
Other	162	160	136	154	153	151	115	127
**Total	1,091	1,004	825	906	908	925	790	839**

NOTE: Although 1987-88 is the first year that person-years devoted to the administration of extramural programs are being shown separately, these personnel have been previously included, in most cases, with the activity being administered.

TABLE 29. Total Expenditures in the Natural Sciences, by Ministry or Agency and Sources of Funds, 1988-89

Ministry or agency	Ministerial budget	Transfers from other ministries	Transfers from federal government	From other sources	Total
	($'000)				
Advanced Education & Job Training	15,088	-	1,426	-	16,514
Agriculture & Fisheries	6,459	-	1,007	-	7,466
Crown Lands	13,518	1,725	350	238	15,831
Energy, Mines & Petroleum Resources	7,046	914	812	-	8,772
Environment	7,196	-	-	174	7,370
Forests	28,971	3,027	2,431	-	34,429
Health Care Research Foundation	-	-	-	5,127	5,127
Municipal Affairs, Recreation & Culture	5,401	-	153	393	5,947
Parks	583	-	-	-	583
Science Council of B.C.	4,300	143	100	385	4,928
Transportation & Highways	20	-	-	-	20
Total	**88,582**	**5,809**	**6,279**	**6,317**	**106,987**

TABLE 30. Total Expenditures in the Natural Sciences, by Activity and Performer, 1988-89

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Research & development:							
Current expenditures:							
In-house	12,474	...	...	...	...	...	12,474
Contracts	355	733	787	-	-	3,603	5,478
Grants	...	9,470	6,882	245	2,125	3,992	22,714
Research fellowships	-	222	2,698	-	-	-	2,920
Administration of extramural R&D programs	1,178	...	-	-	-	-	1,178
Sub-total	14,007	10,425	10,367	245	2,125	7,595	44,764
Capital expenditures	424	...	...	...	...	...	424
Related scientific activities:							
Current expenditures:							
Education support	-	-	5	-	-	1,215	1,220
Technical surveys	29,514	10,749	103	-	-	-	40,366
Information services	4,144	167	957	-	125	114	5,507
Special services & studies	4,641	1,770	-	-	-	740	7,151
Museum services	4,981	-	-	-	-	5	4,986
Administration of extramural RSA programs	658	-	-	-	-	-	658
Sub-total	43,938	12,686	1,065	-	125	2,074	59,888
Capital expenditures	1,911	...	...	...	...	...	1,911
Total	**60,280**	**23,111**	**11,432**	**245**	**2,250**	**9,669**	**106,987**

1 Includes only annual funding by Provincial Government.

TABLE 31. Total Expenditures in the Natural Sciences, by Ministry or Agency and Performer, 1988-89

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	446	6,000	3,261	-	1,500	5,307	16,514
Agriculture & Fisheries	4,389	2,336	733	-	-	8	7,466
Crown Lands	6,795	9,029	7	-	-	-	15,831
Energy, Mines & Petroleum Resources	7,704	961	75	-	-	32	8,772
Environment	6,970	270	110	-	-	20	7,370
Forests	26,482	2,921	673	-	750	3,603	34,429
Health Care Research Foundation	208	35	4,639	245	-	-	5,127
Municipal Affairs, Recreation & Culture ..	5,947	-	-	-	-	-	5,947
Parks	583	-	-	-	-	-	583
Science Council of B.C.	738	1,557	1,934	-	-	699	4,928
Transportation & Highways	18	2	-	-	-	-	20
**Total	**60,280**	**23,111**	**11,432**	**245**	**2,250**	**9,669**	**106,987**

1 Includes only annual funding by Provincial Government.

TABLE 32. Total Expenditures in the Natural Sciences, by Ministry or Agency and Activity, 1988-89

Ministry or agency	Research and Development			Related scientific activities							Total
	Current	AEP[1]	Capital	Education support	Technical surveys	Information	Special services & studies	Museum services	AEP[1] services	Capital	
		($'000)									
Advanced Education & Job Training	13,867	130	-	1,148	-	1,136	167	-	66	-	16,514
Agriculture & Fisheries	1,382	51	-	5	166	1,136	4,420	-	306	-	7,466
Crown Lands	411	-	230	-	12,193	2,137	80	-	280	500	15,831
Energy, Mines & Petroleum Resources	115	-	-	-	8,188	155	172	-	6	136	8,772
Environment	1,486	-	-	-	4,933	83	796	7	-	65	7,370
Forests	17,898	379	104	-	14,300	71	497	-	-	1,180	34,429
Health Care Research Foundation	4,919	208	-	-	-	-	-	-	-	-	5,127
Municipal Affairs, Recreation & Culture	-	-	-	-	-	635	333	4,979	-	-	5,947
Parks	-	-	-	-	583	-	-	-	-	-	583
Science Council of B.C.	3,491	410	90	67	-	154	686	-	-	30	4,928
Transportation & Highways	17	-	-	-	3	-	-	-	-	-	20
Total	**43,586**	**1,178**	**424**	**1,220**	**40,366**	**5,507**	**7,151**	**4,986**	**658**	**1,911**	**106,987**

1 Administration of Extramural Programs.

TABLE 33. Total Expenditures on R&D in the Natural Sciences, by Ministry or Agency and Performer, 1988-89

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	130	6,000	2,500	-	1,375	3,992	13,997
Agriculture & Fisheries	359	542	532	-	-	-	1,433
Crown Lands	610	24	7	-	-	-	641
Energy, Mines & Petroleum Resources	-	115	-	-	-	-	115
Environment	1,204	200	82	-	-	-	1,486
Forests	11,405	1,950	673	-	750	3,603	18,381
Health Care Research Foundation	208	35	4,639	245	-	-	5,127
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Science Council of B.C.	500	1,557	1,934	-	-	-	3,991
Transportation & Highways	15	2	-	-	-	-	17
Total	**14,431**	**10,425**	**10,367**	**245**	**2,125**	**7,595**	**45,188**

1 Includes only annual funding by Provincial Government.

TABLE 34. Detail of Intramural Expenditures in the Natural Sciences, by Ministry or Agency, 1988-89

Ministry or agency	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	($'000)			
Advanced Education & Job Training	86	360	-	446
Agriculture & Fisheries	2,858	1,531	-	4,389
Crown Lands	4,359	1,706	730	6,795
Energy, Mines & Petroleum Resources	3,262	4,306	136	7,704
Environment	3,460	3,445	65	6,970
Forests	13,438	11,760	1,284	26,482
Health Care Research Foundation	-	208	-	208
Municipal Affairs, Recreation & Culture	3,248	2,699	-	5,947
Parks	151	432	-	583
Science Council of B.C.	358	260	120	738
Transportation & Highways	10	8	-	18
Total	**31,230**	**26,713**	**2,335**	**60,280**

TABLE 35. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Ministry or Agency, Activity and Category, 1988-89

Ministry or agency	Research & development				Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	-	-	-	-	-	-	-	-
Agriculture & Fisheries	1	1	-	2	45	20	4	69
Crown Lands	3	4	-	7	8	64	13	85
Energy, Mines & Petroleum Resources	-	-	-	-	56	9	9	74
Environment	19	5	1	25	33	39	7	79
Forests .....[1]	82	68	27	177	50	83	24	157
Health Care Research Foundation ...	-	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	19	35	21	75
Parks	-	-	-	-	3	2	-	5
Science Council of B.C.	-	-	-	-	2	-	2	4
Transportation & Highways	-	-	-	-	-	-	-	-
Total	**105**	**78**	**28**	**211**	**216**	**252**	**80**	**548**

1 Administrative personnel included with Science Council of B.C.

TABLE 35. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Ministry or Agency, Activity and Category, 1988-89 - Concluded

Ministry or agency	Administration of extramural programs				Total			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	1	-	2	3	1	-	2	3
Agriculture & Fisheries	4	-	-	4	50	21	4	75
Crown Lands	-	8	-	8	11	76	13	100
Energy, Mines & Petroleum Resources	-	-	-	-	56	9	9	74
Environment	-	-	-	-	52	44	8	104
Forests .....[1]	7	-	2	9	139	151	53	343
Health Care Research Foundation ...	-	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	19	35	21	75
Parks	-	-	-	-	3	2	-	5
Science Council of B.C.	4	-	3	7	6	-	5	11
Transportation & Highways	-	-	-	-	-	-	-	-
Total	**16**	**8**	**7**	**31**	**337**	**338**	**115**	**790**

1 Administrative personnel included with Science Council of B.C.

TABLE 36. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1988-89

Ministry or agency	Advancement of science	Communications	Energy & fuels	
			Fossil fuels	Other
	($'000)			
Advanced Education & Job Training	1,629	1,858	-	548
Agriculture & Fisheries	-	-	-	-
Crown Lands	-	-	-	-
Energy, Mines & Petroleum Resources ...	-	-	-	-
Environment	260	-	-	-
Forests	-	-	-	-
Health Care Research Foundation	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-
Parks	-	-	-	-
Science Council of B.C.	-	676	198	85
Transportation & Highways	-	-	-	-
**Total	**1,889**	**2,534**	**198**	**633**

TABLE 36. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1988-89 - Continued

Ministry or agency	Environmental issues				Health
	Air	Land	Water	Other	
	($'000)				
Advanced Education & Job Training	-	-	-	-	3,468
Agriculture & Fisheries	-	-	-	-	-
Crown Lands	-	9,526	6,305	-	-
Energy, Mines & Petroleum Resources	-	-	180	-	32
Environment	1,599	700	1,042	340	-
Forests	-	-	-	100	-
Health Care Research Foundation	-	-	-	-	5,127
Municipal Affairs, Recreation & Culture	-	-	-	-	-
Parks	-	-	-	-	-
Science Council of B.C.	-	-	-	170	-
Transportation & Highways	-	-	-	-	-
**Total	**1,599**	**10,226**	**7,527**	**610**	**8,627**

TABLE 36. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1988-89 - Continued

Ministry or agency	Industrial & economic development					
	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	($'000)					
Advanced Education & Job Training ..	324	753	841	2,249	812	4,032
Agriculture & Fisheries	6,232	1,234	-	-	-	-
Crown Lands	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	8,560	-
Environment	-	1,280	-	-	-	-
Forests	-	-	34,329	-	-	-
Health Care Research Foundation	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-
Parks	-	-	-	-	-	-
Science Council of B.C.	326	689	601	507	253	724
Transportation & Highways	-	-	-	-	-	-
**Total	**6,882**	**3,956**	**35,771**	**2,756**	**9,625**	**4,756**

TABLE 36. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1988-89 - Concluded

Ministry or agency	Social Development						
	Culture, sport & recreation	Education	Other	Transport-ation	Wildlife	Other	Total
	($'000)						
Advanced Education & Job Training	-	-	-	-	-	-	16,514
Agriculture & Fisheries	-	-	-	-	-	-	7,466
Crown Lands	-	-	-	-	-	-	15,831
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	8,772
Environment	-	-	-	-	2,149	-	7,370
Forests	-	-	-	-	-	-	34,429
Health Care Research Foundation	-	-	-	-	-	-	5,127
Municipal Affairs, Recreation & Culture	5,588	-	-	-	-	359	5,947
Parks	583	-	-	-	-	-	583
Science Council of B.C.	-	67	526	-	-	106	4,928
Transportation & Highways	-	-	-	20	-	-	20
**Total	**6,171**	**67**	**526**	**20**	**2,149**	**465**	**106,987**

TABLE 37. Objectives of Expenditures in the Natural Sciences, by Activity, 1988-89

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
	($'000)				
Advancement of science	130	576	-	1,183	1,889
Communications	80	38	2,416	-	2,534
Energy & fuels:					
Fossil fuels	23	11	164	-	198
Other	10	5	618	-	633
Environmental issues:					
Air	2	1,555	-	42	1,599
Land	305	3,885	31	6,005	10,226
Water	305	4,001	115	3,106	7,527
Other	60	80	424	46	610
Health	208	-	8,387	32	8,627
Industrial & economic development:					
Agriculture	41	3,984	1,108	1,749	6,882
Fisheries	968	853	1,881	254	3,956
Forestry	11,476	15,111	8,229	955	35,771
Manufacturing	60	28	2,668	-	2,756
Minerals	30	7,718	1,021	856	9,625
Other	86	41	3,611	1,018	4,756
Social development:					
Culture, sport & recreation	-	6,171	-	-	6,171
Education	-	-	-	67	67
Other	-	-	-	526	526
Transportation	15	3	2	-	20
Wildlife	632	1,430	82	5	2,149
Other	-	359	-	106	465
Total	**14,431**	**45,849**	**30,757**	**15,950**	**106,987**

TABLE 38. Total Expenditures in the Natural Sciences, by Activity and Performer, 1989-90[e]

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other[1]	Total
	($'000)						
Research & development:							
Current expenditures:							
In-house	13,686	-	-	-	-	-	13,686
Contracts	365	1,366	808	-	-	4,202	6,741
Grants	-	16,450	10,869	1,000	2,375	4,265	34,959
Research fellowships	-	350	3,271	-	-	-	3,621
Administration of extramural R&D programs	1,551	-	-	-	-	-	1,551
Sub-total	15,602	18,166	14,948	1,000	2,375	8,467	60,558
Capital expenditures	1,112	-	-	-	-	-	1,112
Related scientific activities:							
Current expenditures:							
Education support	-	-	26	-	-	1,265	1,291
Technical surveys	30,283	11,778	87	-	-	-	42,148
Information services	6,579	2,825	808	-	125	110	10,447
Special services & studies	1,936	35	-	-	-	1,823	3,794
Museum services	6,151	-	-	-	-	5	6,156
Administration of extramural RSA programs	693	-	-	-	-	-	693
Sub-total	45,642	14,638	921	-	125	3,203	64,529
Capital expenditures	1,750	-	-	-	-	-	1,750
Total	**64,106**	**32,804**	**15,869**	**1,000**	**2,500**	**11,670**	**127,949**

1 Includes only annual funding by Provincial Government.

TABLE 39. Total Expenditures in the Natural Sciences, by Ministry or Agency and Performer, 1989-90[e]

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	808	6,000	3,308	500	1,750	5,482	17,848
Agriculture & Fisheries	4,540	3,548	594	-	-	61	8,743
Crown Lands	7,465	11,073	20	-	-	-	18,558
Energy, Mines & Petroleum Resources	7,256	777	77	-	-	371	8,481
Environment	7,222	265	90	-	-	5	7,582
Forests	27,349	2,289	680	-	450	4,141	34,909
Health Care Research Foundation	250	-	5,750	500	-	-	6,500
Municipal Affairs, Recreation & Culture	7,257	-	-	-	-	-	7,257
Parks	708	-	-	-	-	-	708
Science Council of B.C.	830	8,850	5,350	-	300	1,610	16,940
Transportation & Highways	421	2	-	-	-	-	423
Total	**64,106**	**32,804**	**15,869**	**1,000**	**2,500**	**11,670**	**127,949**

1 Includes only annual funding by Provincial Government.

TABLE 40. Total Expenditures in the Natural Sciences, by Ministry or Agency and Activity, 1989-90[e]

Ministry or agency	Research and Development			Related scientific activities							Total
	Current	AEP[1]	Capital	Education support	Technical surveys	Information services	Special services & studies	Museum services	AEP[1]	Capital	
	($'000)										
Advanced Education & Job Training ...	14,690	250	-	1,165	-	1,383	252	-	108	-	17,848
Agriculture & Fisheries	1,468	53	-	26	1,251	5,615	-	-	330	-	8,743
Crown Lands	1,120	-	50	-	14,023	2,250	80	-	250	785	18,558
Energy, Mines & Petroleum Resources	-	-	-	-	7,732	79	449	-	5	216	8,481
Environment	1,490	-	-	-	5,160	85	815	10	-	22	7,582
Forests	19,153	398	1,062	-	13,274	95	200	-	-	727	34,909
Health Care Research Foundation	6,250	250	-	-	-	-	-	-	-	-	6,500
Municipal Affairs, Recreation & Culture	-	-	-	-	-	778	333	6,146	-	-	7,257
Parks	-	-	-	-	708	-	-	-	-	-	708
Science Council of B.C.	14,700	600	-	100	-	160	1,380	-	-	-	16,940
Transportation & Highways	136	-	-	-	-	2	285	-	-	-	423
**Total ..... **	**59,007**	**1,551**	**1,112**	**1,291**	**42,148**	**10,447**	**3,794**	**6,156**	**693**	**1,750**	**127,949**

1 Administration of Extramural Programs

TABLE 41. Total Expenditures on R&D in the Natural Sciences, by Ministry or Agency and Performer, 1989-90[e]

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	250	6,000	2,500	500	1,625	4,065	14,940
Agriculture & Fisheries	378	514	568	-	-	61	1,521
Crown Lands	550	600	20	-	-	-	1,170
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	-
Environment	1,210	200	80	-	-	-	1,490
Forests	13,342	2,000	680	-	450	4,141	20,613
Health Care Research Foundation	250	-	5,750	500	-	-	6,500
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Science Council of B.C.	600	8,850	5,350	-	300	200	15,300
Transportation & Highways	134	2	-	-	-	-	136
Total	**16,714**	**18,166**	**14,948**	**1,000**	**2,375**	**8,467**	**61,670**

1 Includes only annual funding by Provincial Government.

TABLE 42. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Ministry or Agency, Activity and Category, 1989-90[e]

Ministry or agency	Research & development				Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	-	-	-	-	-	-	-	-
Agriculture & Fisheries	1	1	-	2	45	20	4	69
Crown Lands	5	4	-	9	11	59	13	83
Energy, Mines & Petroleum Resources	-	-	-	-	88	13	18	119
Environment	17	4	1	22	31	40	7	78
Forests .....[1]	85	71	28	184	53	69	23	145
Health Care Research Foundation ...	-	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	20	36	21	77
Parks	-	-	-	-	3	2	-	5
Science Council of B.C.	-	-	-	-	2	-	4	6
Transportation & Highways	1	1	-	2	2	1	-	3
Total	**109**	**81**	**29**	**219**	**255**	**240**	**90**	**585**

1 Administrative personnel included with Science Council of B.C.

TABLE 42. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Ministry or Agency, Activity and Category, 1989-90[e] - Concluded

Ministry or agency	Administration of extramural programs				Total			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	4	-	2	6	4	-	2	6
Agriculture & Fisheries	3	-	-	3	49	21	4	74
Crown Lands	-	8	-	8	16	71	13	100
Energy, Mines & Petroleum Resources	-	-	-	-	88	13	18	119
Environment	-	-	-	-	48	44	8	100
Forests .....[1]	7	-	2	9	145	140	53	338
Health Care Research Foundation ...	-	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	20	36	21	77
Parks	-	-	-	-	3	2	-	5
Science Council of B.C.	5	-	4	9	7	-	8	15
Transportation & Highways	-	-	-	-	3	2	-	5
Total	**19**	**8**	**8**	**35**	**383**	**329**	**127**	**839**

1 Administrative personnel included with Science Council of B.C.

TABLE 43. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1989-90[e]

Ministry or agency	Advancement of science	Communications	Energy & fuels	
			Fossil fuels	Other
	($'000)			
Advanced Education & Job Training ..	2,005	1,961	-	549
Agriculture & Fisheries	-	-	-	-
Crown Lands	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-
Environment	240	-	-	-
Forests	-	-	-	-
Health Care Research Foundation	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-
Parks	-	-	-	-
Science Council of B.C.	-	2,485	1,041	-
Transportation & Highways	-	-	-	-
**Total	**2,245**	**4,446**	**1,041**	**549**

TABLE 43. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1989-90[e] - Continued

Ministry or agency	Environmental issues				Health
	Air	Land	Water	Other	
	($'000)				
Advanced Education & Job Training	-	-	-	-	3,478
Agriculture & Fisheries	-	-	-	-	-
Crown Lands	-	14,158	4,400	-	-
Energy, Mines & Petroleum Resources	-	-	306	-	-
Environment	1,650	800	1,092	375	-
Forests	175	-	-	125	-
Health Care Research Foundation	-	-	-	-	6,500
Municipal Affairs, Recreation & Culture	-	-	-	-	-
Parks	-	-	-	-	-
Science Council of B.C.	-	-	-	621	-
Transportation & Highways	-	-	-	-	-
**Total	**1,825**	**14,958**	**5,798**	**1,121**	**9,978**

TABLE 43. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1989-90[e] - Continued

Ministry or agency	Industrial & economic development					
	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	($'000)					
Advanced Education & Job Training ..	325	657	843	2,501	739	4,790
Agriculture & Fisheries	7,853	890	-	-	-	-
Crown Lands	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	8,175	-
Environment	-	1,280	-	-	-	-
Forests	-	-	34,609	-	-	-
Health Care Research Foundation	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-
Parks	-	-	-	-	-	-
Science Council of B.C.	1,196	2,531	2,205	1,864	932	2,655
Transportation & Highways	-	-	-	-	-	-
**Total	**9,374**	**5,358**	**37,657**	**4,365**	**9,846**	**7,445**

TABLE 43. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1989-90[e] - Concluded

Ministry or agency	Social Development			Transportation	Wildlife	Other	Total
	Culture, sport & recreation	Education	Other				
	($'000)						
Advanced Education & Job Training ..	-	-	-	-	-	-	17,848
Agriculture & Fisheries	-	-	-	-	-	-	8,743
Crown Lands	-	-	-	-	-	-	18,558
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	8,481
Environment	-	-	-	-	2,145	-	7,582
Forests	-	-	-	-	-	-	34,909
Health Care Research Foundation	-	-	-	-	-	-	6,500
Municipal Affairs, Recreation & Culture	6,898	-	-	-	-	359	7,257
Parks	708	-	-	-	-	-	708
Science Council of B.C.	-	100	1,200	-	-	110	16,940
Transportation & Highways	-	-	-	423	-	-	423
**Total	**7,606**	**100**	**1,200**	**423**	**2,145**	**469**	**127,949**

TABLE 44. Objectives of Expenditures in the Natural Sciences, by Activity, 1989-90[e]

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
	($'000)				
Advancement of science	250	798	-	1,197	2,245
Communications	96	37	4,313	-	4,446
Energy & fuels:					
Fossil fuels	41	15	985	-	1,041
Other	-	-	549	-	549
Environmental issues:					
Air	185	1,600	-	40	1,825
Land	350	5,715	420	8,473	14,958
Water	200	3,092	200	2,306	5,798
Other	64	109	913	35	1,121
Health	250	-	9,728	-	9,978
Industrial & economic development:					
Agriculture	55	4,113	2,243	2,963	9,374
Fisheries	997	854	3,410	97	5,358
Forestry	13,252	14,040	10,076	289	37,657
Manufacturing	72	28	4,265	-	4,365
Minerals	36	7,270	1,621	919	9,846
Other	102	39	6,151	1,153	7,445
Social development:					
Culture, sport & recreation	-	7,606	-	-	7,606
Education	-	-	-	100	100
Other	-	-	-	1,200	1,200
Transportation	134	287	2	-	423
Wildlife	630	1,430	80	5	2,145
Other	-	359	-	110	469
Total	**16,714**	**47,392**	**44,956**	**18,887**	**127,949**

Social Sciences and Humanities

TABLE 45. Total Expenditures in the Social Sciences and Humanities, by Activity, 1982-83 to 1989-90

Activity	1982-83[e]	1983-84	1984-85[e]	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Research and development:								
Current expenditures:								
In-house	732	630	683	443	154	111	150	200
Contracts	10	281	255	265	276	200	6	10
Grants	-	70	80	90	86	70	151	130
Research fellowships	-	-	-	-	-	-	-	22
Administration of extramural R&D programs	...	...	...	...	...	90	25	25
Sub-total	742	981	1,018	798	516	471	332	387
Capital expenditures	20	2	1	-	10	-	-	-
Related scientific activities:								
Current expenditures	28,275	19,486	16,016	20,529	24,882	24,748	19,676	22,293
Administration of extramural RSA programs	...	...	...	...	...	440	544	479
Sub-total	28,275	19,486	16,016	20,529	24,882	25,188	20,220	22,772
Capital expenditures	655	584	560	530	312	1,516	700	686
Total	**29,692**	**21,053**	**17,595**	**21,857**	**25,720**	**27,175**	**21,252**	**23,845**

TABLE 46. Total Expenditures in the Social Sciences and Humanities, by Ministry or Agency, 1982-83 to 1989-90

Ministry or agency	1982-83[e]	1983-84	1984-85[e]	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Advanced Education & Job Training	...	...	...	...	...	959	985	1,187
Attorney General	1,369	757	846	837	848	1,533	622	660
Consumer & Corporate Affairs	562	539	450	439	679	...	...	...
Economic Development	...	...	...	...	...	8,775	...	...
Education	1,897	1,160	900	2,403	2,559	3,499	1,035	1,180
Energy, Mines & Petroleum Resources	5,784	5,946	1,975	2,367	2,909	2,500[e]	...	...
Environment	170	145	138	90	85	...	110	85
Environment & Parks	...	...	...	...	...	270	...	...
Finance	2,277	-	-	52	95	...	...	...
Finance & Corporate Relations	...	...	...	...	...	381	1,590	2,492
Forests	142	-	-	-	-	...	-	-
Health	1,755	1,290	1,517	1,715	1,570	1,364	2,457	2,103
Human Resources	...	250	316	301	595	...	...	...
Industry & Small Business Development	8,240	5,348	5,348	4,539	6,121	...	...	...
International Trade, Science & Investment	...	...	...	123	748	...	...	...
Labour	1,236	157	157	393	352	...	...	...
Labour & Consumer Services	...	...	...	...	...	175	85	85
Lands, Parks & Housing	225	322	404	...	150	...	...	...
Municipal Affairs	351	389	391	510	411	414	...	...
Municipal Affairs, Recreation & Culture	...	...	...	...	...	...	4,023	4,829
Native Affairs	...	...	...	...	...	...	14	5
Parks	...	...	...	...	...	...	202	202
Postsecondary Education	...	...	...	1,883	1,546	...	...	...
Provincial Secretary & Government Services	4,471	4,232	4,510	5,869	6,580	2,256	...	...
Regional Development	...	...	...	...	...	...	6,272	6,160
Social Services & Housing	...	...	...	...	...	-	-	-
Tourism	300	323	393	215	353	...	...	...
Tourism & Provincial Secretary	...	...	...	...	...	...	3,857	4,857
Tourism, Recreation & Culture	...	...	...	...	...	4,950	...	...
Transportation & Highways	913	195	250	121	119	99	-	-
Total	**29,692**	**21,053**	**17,595**	**21,857**	**25,720**	**27,175**	**21,252**	**23,845**

TABLE 47. Total Expenditures in the Social Sciences and Humanities, by Performer, 1982-83 to 1989-90

Performer	1982-83[e]	1983-84	1984-85[e]	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Intramural	20,915	13,739	13,457	16,862	20,677	21,096	15,416	18,727
Industry	6,460	5,453	2,096	3,892	3,316	4,481	3,127	2,666
Universities	51	493	548	362	417	370	724	730
Hospitals and health organizations	54	40	40	59	71	88	324	82
B.C. Research Council[1]	106	179	224	11	6	200	53	158
Other	2,106	1,149	1,230	671	1,233	940	1,608	1,482
Total	**29,692**	**21,053**	**17,595**	**21,857**	**25,720**	**27,175**	**21,252**	**23,845**

1 Includes only annual funding by Provincial Government.

TABLE 48. Total Expenditures on R&D in the Social Sciences and Humanities, by Performer, 1982-83 to 1989-90

Performer	1982-83[e]	1983-84	1984-85[e]	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Intramural	762	642	694	443	164	201	175	225
Industry	-	8	8	20	20	190	-	-
Universities	-	55	53	50	54	-	86	90
Hospitals & health organizations	-	-	-	-	-	-	-	-
B.C. Research Council[1]	-	-	-	-	-	-	-	-
Other	-	278	264	285	288	80	71	72
Total	**762**	**983**	**1,019**	**798**	**526**	**471**	**332**	**387**

1 Includes only annual funding by Provincial Government.

TABLE 49. Total Expenditures on R&D in the Social Sciences and Humanities, by Ministry or Agency, 1982-83 to 1989-90

Ministry or agency	1982-83[e]	1983-84	1984-85[e]	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	($'000)							
Advanced Education & Job Training	...	...	...	...	...	-	-	-
Attorney General	193	125	125	54	60	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	...	...	...
Economic Development	...	...	...	...	...	50	...	...
Education	-	-	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	-	-	-	-
Environment	-	-	-	-	-	...	-	-
Environment & Parks	...	...	...	...	...	-	...	...
Finance	-	-	-	-	-	...	...	...
Finance & Corporate Relations	...	...	...	...	...	-	-	-
Forests	-	-	-	-	-	...	-	-
Health	97	50	90	185	-	99	221	250
Human Resources	...	45	58	55	49	...	...	...
Industry & Small Business Development	-	25	25	20	60	...	...	...
International Trade, Science & Investment	...	...	...	-	-	...	...	...
Labour	-	-	-	-	-	...	...	...
Labour & Consumer Services	...	...	...	...	...	-	-	-
Lands, Parks & Housing	-	-	-	-	-	...	...	...
Municipal Affairs	22	39	39	-	-	-	...	...
Municipal Affairs, Recreation & Culture	...	...	...	...	...	...	111	137
Native Affairs	...	...	...	...	...	...	-	-
Parks	...	...	...	...	...	...	-	-
Postsecondary Education	...	...	...	-	-	...	...	...
Provincial Secretary & Government Services	450	699	682	478	357	-	...	...
Regional Development	...	...	...	...	...	...	-	-
Social Services & Housing	...	...	...	...	...	-	-	-
Tourism	-	-	-	-	-	...	-	-
Tourism, Recreation & Culture	...	...	...	...	...	322	...	...
Tourism & Provincial Secretary	...	...	...	...	...	...	-	-
Transportation & Highways	-	-	-	6	-	-	-	-
Total	**762**	**983**	**1,019**	**798**	**526**	**471**	**332**	**387**

TABLE 50. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Activity and Category, 1982-83 to 1989-90

Activity and category	1982-83[e]	1983-84	1984-85[e]	1985-86	1986-87	1987-88	1988-89	1989-90[e]
	(person-years)							
Research & development:								
Scientific & professional	19	13	13	7	3	3	4	4
Technical	6	6	7	2	-	-	-	-
Other	2	1	1	5	-	-	1	1
Sub-total	27	20	21	14	3	3	5	5
Related scientific activities:								
Scientific & professional	227	170	157	190	244	218	158	181
Technical	78	43	46	50	29	29	42	50
Other	134	104	92	111	104	89	47	52
Sub-total	439	317	295	351	377	336	247	283
Administration of extramural programs:								
Scientific & professional	...	...	...	...	...	11	8	9
Technical	...	...	...	...	...	2	3	2
Other	...	...	...	...	...	2	2	2
Sub-total	...	...	...	...	...	15	13	13
Total science activities:								
Scientific & professional	246	183	170	197	247	232	170	194
Technical	84	49	53	52	29	31	45	52
Other	136	105	93	116	104	91	50	55
Total	**466**	**337**	**316**	**365**	**380**	**354**	**265**	**301**

NOTE: Although 1987-88 is the first year that person-years devoted to the administration of extramural programs are being shown separately, these personnel have been previously included, in most cases, with the activity being administered.

TABLE 51. Total Expenditures in the Social Sciences and Humanities, by Ministry or Agency and Sources of Funds, 1988-89

Ministry or agency	Ministerial budget	Transfers from federal government	From trust funds	From other sources	Total
	($'000)				
Advanced Education & Job Training	985	-	-	-	985
Attorney General	622	-	-	-	622
Education	1,035	-	-	-	1,035
Environment	110	-	-	-	110
Finance & Corporate Affairs	1,590	-	-	-	1,590
Health	2,392	65	-	-	2,457
Labour & Consumers Services	85	-	-	-	85
Municipal Affairs, Recreation & Culture	3,086	154	587	196	4,023
Native Affairs	14	-	-	-	14
Parks	202	-	-	-	202
Regional Development	6,044	228	-	-	6,272
Tourism & Provincial Secretary	3,353	504	-	-	3,857
Total	**19,518**	**951**	**587**	**196**	**21,252**

TABLE 52. Total Expenditures in the Social Sciences and Humanities, by Activity and Performer, 1988-89

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Research and development:							
Current expenditures:							
In-house	150	...	...	...	...	...	150
Contracts	-	-	-	-	-	6	6
Grants	...	-	86	-	-	65	151
Research fellowships	-	-	-	-	-	-	-
Administration of extramural R&D programs	25	...	...	...	...	...	25
Sub-Total	175	-	86	-	-	71	332
Capital expenditures	-	...	...	...	...	...	-
Related scientific activities:							
Current expenditures	13,997	3,127	638	324	53	1,537	19,676
Administration of extramural RSA programs	544	...	...	...	...	...	544
Sub-total	14,541	3,127	638	324	53	1,537	20,220
Capital expenditures	700	...	...	...	...	...	700
Total	**15,416**	**3,127**	**724**	**324**	**53**	**1,608**	**21,252**

1 Includes only annual funding by Provincial Government.

TABLE 53. Total Expenditures in the Social Sciences and Humanities, by Ministry or Agency and Performer, 1988-89

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	572	115	74	-	20	204	985
Attorney General	146	-	-	-	-	476	622
Education	650	340	-	-	-	45	1,035
Environment	110	-	-	-	-	-	110
Finance & Corporate Relations	1,590	-	-	-	-	-	1,590
Health	1,513	-	411	324	33	176	2,457
Labour & Consumers Services	85	-	-	-	-	-	85
Municipal Affairs, Recreation & Culture	3,475	61	86	-	-	401	4,023
Native Affairs	2	12	-	-	-	-	14
Parks	202	-	-	-	-	-	202
Regional Development	3,718	2,095	153	-	-	306	6,272
Tourism & Provincial Secretary	3,353	504	-	-	-	-	3,857
Total	**15,416**	**3,127**	**724**	**324**	**53**	**1,608**	**21,252**

1 Includes only annual funding by provincial government.

TABLE 54. Total Expenditures in the Social Sciences and Humanities, by Ministry or Agency and Activity, 1988-89

Ministry or agency	Research & development			Related scientific activities			Total
	Current	AEP[1]	Capital	Current	AEP[1]	Capital	
	($'000)						
Advanced Education & Job Training	-	-	-	868	117	-	985
Attorney General	-	-	-	622	-	-	622
Education	-	-	-	1,035	-	-	1,035
Environment	-	-	-	110	-	-	110
Finance & Corporate Relations	-	-	-	1,504	-	86	1,590
Health	221	-	-	2,216	-	20	2,457
Labour & Consumers Services	-	-	-	85	-	-	85
Municipal Affairs, Recreation & Culture	86	25	-	3,837	75	-	4,023
Native Affairs	-	-	-	12	2	-	14
Parks	-	-	-	202	-	-	202
Regional Development	-	-	-	5,574	128	570	6,272
Tourism & Provincial Secretary	-	-	-	3,611	222	24	3,857
Total	**307**	**25**	**-**	**19,676**	**544**	**700**	**21,252**

1 Administration of extramural programs.

TABLE 55. Total Expenditures on R&D in the Social Sciences and Humanities, by Ministry or Agency and Performer, 1988-89

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	-	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	-
Finance & Corporate Relations	-	-	-	-	-	-	-
Health	150	-	-	-	-	71	221
Labour & Consumers Services	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	25	-	86	-	-	-	111
Native Affairs	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Regional Development	-	-	-	-	-	-	-
Tourism & Provincial Secretary	-	-	-	-	-	-	-
Total	**175**	**-**	**86**	**-**	**-**	**71**	**332**

1 Includes only annual funding by Provincial Government.

TABLE 56. Detail of Intramural Expenditures in the Social Sciences and Humanities, by Ministry or Agency, 1988-89

Ministry or agency	Current expenditures		Capital Expenditures	Total
	Personnel costs	Other costs		
	($000)			
Advanced Education & Job Training	496	76	-	572
Attorney General	120	26	-	146
Education	420	230	-	650
Environment	100	10	-	110
Finance & Corporate Relations	982	522	86	1,590
Health	1,110	383	20	1,513
Labour & Consumers Services	75	10	-	85
Municipal Affairs, Recreation & Culture	2,130	1,345	-	3,475
Native Affairs	1	1	-	2
Parks	142	60	-	202
Regional Development	2,634	514	570	3,718
Tourism & Provincial Secretary	1,571	1,758	24	3,353
Total	**9,781**	**4,935**	**700**	**15,416**

TABLE 57. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Ministry or Agency, Activity and Category, 1988-89

Ministry or agency	Research & development				Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training	-	-	-	-	6	2	3	11
Attorney General	-	-	-	-	3	-	-	3
Education	-	-	-	-	2	6	1	9
Environment	-	-	-	-	3	-	-	3
Finance & Corporate Relations	-	-	-	-	20	-	2	22
Health	4	-	1	5	16	8	2	26
Labour & Consumers Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	-	-	-	32	12	5	49
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	3	1	-	4
Regional Development	-	-	-	-	53	5	17	75
Tourism & Provincial Secretary	-	-	-	-	19	7	17	43
Total	**4**	**-**	**1**	**5**	**158**	**42**	**47**	**247**

TABLE 57. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Ministry or Agency, Activity and Category, 1988-89 - Concluded

Ministry or agency	Administration of extramural programs				Total			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training	2	-	-	2	8	2	3	13
Attorney General	-	-	-	-	3	-	-	3
Education	-	-	-	-	2	6	1	9
Environment	-	-	-	-	3	-	-	3
Finance & Corporate Relations	-	-	-	-	20	-	2	22
Health	-	-	-	-	20	8	3	31
Labour & Consumers Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	2	-	2	32	14	5	51
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	3	1	-	4
Regional Development	4	1	-	5	57	6	17	80
Tourism & Provincial Secretary	2	-	2	4	21	7	19	47
Total	**8**	**3**	**2**	**13**	**170**	**45**	**50**	**265**

TABLE 58. Objectives of Expenditures in the Social Sciences and Humanities Sciences, by Ministry or Agency, 1988-89

Ministry or agency	Advancement of science	Communications	Energy & fuels		Environment	
			Fossil fuels	Other	Land	Other
	($'000)					
Advanced Education & Job Training ..	416	-	-	-	-	-
Attorney General	-	-	-	-	-	-
Education	-	125	-	-	-	-
Environment	-	-	-	-	-	55
Finance & Corporate Relations	-	12	12	-	-	-
Health	-	-	-	-	75	48
Labour & Consumers Services	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-
Native Affairs	-	-	-	-	-	-
Parks	-	-	-	-	-	-
Regional Development	74	265	-	125	-	226
Tourism & Provincial Secretary	-	-	-	-	-	-
Total	**490**	**402**	**12**	**125**	**75**	**329**

TABLE 58. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry or Agency 1988-89 - Continued

Ministry or agency	Health	Industrial & economic development					
		Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	($'000)						
Advanced Education & Job Training ..	-	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	-
Finance & Corporate Relations	47	12	-	24	24	-	950
Health	2,334	-	-	-	-	-	-
Labour & Consumers Services	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-	-
Native Affairs	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Regional Development	62	77	334	877	1,809	438	955
Tourism & Provincial Secretary	-	-	-	-	-	-	-
Total	**2,443**	**89**	**334**	**901**	**1,833**	**438**	**1,905**

TABLE 58. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry or Agency, 1988-89 - Concluded

Ministry or agency	Social development					Transportation	Other	Total
	Culture, sport & recreation	Education	Human resources	Urban & regional studies	Other			
	($'000)							
Advanced Education & Job Training	-	523	-	-	46	-	-	985
Attorney General	-	-	-	-	622	-	-	622
Education	-	910	-	-	-	-	-	1,035
Environment	55	-	-	-	-	-	-	110
Finance & Corporate Affairs	-	23	23	-	439	24	-	1,590
Health	-	-	-	-	-	-	-	2,457
Labour & Consumers Services	-	-	80	-	5	-	-	85
Municipal Affairs, Recreation & Culture	3,045	393	-	585	-	-	-	4,023
Native Affairs	14	-	-	-	-	-	-	14
Parks	202	-	-	-	-	-	-	202
Regional Development	378	-	112	464	-	-	76	6,272
Tourism & Provincial Secretary	3,857	-	-	-	-	-	-	3,857
Total	**7,551**	**1,849**	**215**	**1,049**	**1,112**	**24**	**76**	**21,252**

TABLE 59. Objectives of Expenditures in the Social Sciences and Humanities, by Activity, 1988-89

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
	($'000)				
Advancement of science	-	325	-	165	490
Communications	-	124	-	278	402
Energy & fuels:					
Fossil fuels	-	12	-	-	12
Other	-	74	-	51	125
Environmental issues:					
Land	-	-	-	75	75
Other	-	204	-	125	329
Health	150	1,447	71	775	2,443
Industrial & economic development:					
Agriculture	-	12	-	77	89
Fisheries	-	104	-	230	334
Forestry	-	544	-	357	901
Manufacturing	-	1,195	-	638	1,833
Minerals	-	260	-	178	438
Other	-	1,522	-	383	1,905
Social development:					
Culture, sport & recreation	-	6,880	-	671	7,551
Education	25	1,061	59	704	1,849
Human resources	-	215	-	-	215
Urban & regional studies	-	590	27	432	1,049
Other	-	598	-	514	1,112
Transportation	-	24	-	-	24
Other	-	50	-	26	76
Total	**175**	**15,241**	**157**	**5,679**	**21,252**

TABLE 60. Total Expenditures in the Social Sciences and Humanities, by Activity and Performer, 1989-90[e]

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Research and development:							
Current expenditures:							
In-house	200	...	...	...	...	...	200
Contracts	-	-	-	-	-	10	10
Grants	...	-	90	-	-	40	130
Research fellowships	-	-	-	-	-	22	22
Administration of extramural R&D programs	25	...	...	...	...	...	25
Sub-Total	225	-	90	-	-	72	387
Capital expenditures	-	...	...	...	...	...	-
Related scientific activities:							
Current expenditures	17,337	2,666	640	82	158	1,410	22,293
Administration of extramural RSA programs	479	...	...	...	...	...	479
Sub-total	17,816	2,666	640	82	158	1,410	22,772
Capital expenditures	686	...	...	...	...	...	686
Total	**18,727**	**2,666**	**730**	**82**	**158**	**1,482**	**23,845**

1 Includes only annual funding by Provincial Government.

TABLE 61. Total Expenditures in the Social Sciences and Humanities, by Ministry or Agency and Performer, 1989-90[e]

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	683	124	90	-	30	260	1,187
Attorney General	160	-	-	-	-	500	660
Education	750	360	20	-	-	50	1,180
Environment	85	-	-	-	-	-	85
Finance & Corporate Relations	2,492	-	-	-	-	-	2,492
Health	1,563	-	380	82	28	50	2,103
Labour & Consumers Services	85	-	-	-	-	-	85
Municipal Affairs, Recreation & Culture	4,222	95	90	-	-	422	4,829
Native Affairs	1	4	-	-	-	-	5
Parks	202	-	-	-	-	-	202
Regional Development	4,010	1,700	150	-	100	200	6,160
Tourism & Provincial Secretary	4,474	383	-	-	-	-	4,857
Total	**18,727**	**2,666**	**730**	**82**	**158**	**1,482**	**23,845**

1 Includes only annual funding by Provincial Government.

TABLE 62. Total Expenditures in the Social Sciences and Humanities, by Ministry or Agency and Activity, 1989-90*

Ministry or agency	Research & development			Related scientific activities			Total
	Current	AEP[1]	Capital	Current	AEP[1]	Capital	
	($'000)						
Advanced Education & Job Training	-	-	-	1,062	125	-	1,187
Attorney General	-	-	-	660	-	-	660
Education	-	-	-	1,180	-	-	1,180
Environment	-	-	-	75	-	10	85
Finance & Corporate Relations	-	-	-	2,346	-	146	2,492
Health	250	-	-	1,823	-	30	2,103
Labour & Consumers Services	-	-	-	85	-	-	85
Municipal Affairs, Recreation & Culture	112	25	-	4,617	75	-	4,829
Native Affairs	-	-	-	4	1	-	5
Parks	-	-	-	202	-	-	202
Regional Development	-	-	-	5,550	110	500	6,160
Tourism & Provincial Secretary	-	-	-	4,689	168	-	4,857
Total	**362**	**25**	**-**	**22,293**	**479**	**686**	**23,845**

1 Administration of extramural programs.

TABLE 63. Total Expenditures on R&D in the Social Sciences and Humanities, by Ministry or Agency and Performer, 1989-90*

Ministry or agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council[1]	Other	Total
	($'000)						
Advanced Education & Job Training	-	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	-
Finance & Corporate Relations	-	-	-	-	-	-	-
Health	200	-	-	-	-	50	250
Labour & Consumers Services	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	25	-	90	-	-	22	137
Native Affairs	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Regional Development	-	-	-	-	-	-	-
Tourism & Provincial Secretary	-	-	-	-	-	-	-
Total	**225**	**-**	**90**	**-**	**-**	**72**	**387**

1 Includes only annual funding by Provincial Government.

TABLE 64. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Ministry or Agency, Activity and Category, 1989-90[e]

Ministry or agency	Research & development				Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	-	-	-	-	9	2	3	14
Attorney General	-	-	-	-	3	-	-	3
Education	-	-	-	-	3	8	-	11
Environment	-	-	-	-	2	-	-	2
Finance & Corporate Relations	-	-	-	-	28	-	3	31
Health	4	-	1	5	16	8	2	26
Labour & Consumers Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	-	-	-	32	13	6	51
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	3	1	-	4
Regional Development	-	-	-	-	55	5	15	75
Tourism & Provincial Secretary	-	-	-	-	29	12	23	64
Total	**4**	**-**	**1**	**5**	**181**	**50**	**52**	**283**

TABLE 64. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Ministry or Agency, Activity and Category, 1989-90[e] - Concluded

Ministry or agency	Administration of extramural programs				Total			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other	Total
	(person-years)							
Advanced Education & Job Training ..	2	-	-	2	11	2	3	16
Attorney General	-	-	-	-	3	-	-	3
Education	-	-	-	-	3	8	-	11
Environment	-	-	-	-	2	-	-	2
Finance & Corporate Relations	-	-	-	-	28	-	3	31
Health	-	-	-	-	20	8	3	31
Labour & Consumers Services	-	-	-	-	1	1	-	2
Municipal Affairs, Recreation & Culture	-	2	-	2	32	15	6	53
Native Affairs	-	-	-	-	-	-	-	-
Parks	-	-	-	-	3	1	-	4
Regional Development	5	-	-	5	60	5	15	80
Tourism & Provincial Secretary	2	-	2	4	31	12	25	68
Total	**9**	**2**	**2**	**13**	**194**	**52**	**55**	**301**

TABLE 65. Objectives of Expenditures in the Social Sciences and Humanities by Ministry or Agency, 1989-90[e]

Ministry or agency	Advancement of science	Communications	Energy & fuels		Environment	
			Fossil fuels	Other	Land	Other
	($'000)					
Advanced Education & Job Training ..	525	-	-	-	-	-
Attorney General	-	-	-	-	-	-
Education	-	225	-	-	-	-
Environment	-	-	-	-	-	60
Finance & Corporate Relations	-	12	12	-	-	-
Health	-	-	-	-	50	50
Labour & Consumers Services	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-
Native Affairs	-	-	-	-	-	-
Parks	-	-	-	-	-	-
Regional Development	80	250	-	123	-	226
Tourism & Provincial Secretary	-	-	-	-	-	-
**Total	**605**	**487**	**12**	**123**	**50**	**336**

TABLE 65. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry or Agency 1989-90[e] - Continued

Ministry or agency	Health	Industrial & economic development					
		Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	($'000)						
Advanced Education & Job Training ..	-	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	-
Finance & Corporate Relations	50	12	-	25	25	-	957
Health	2,003	-	-	-	-	-	-
Labour & Consumers Services	-	-	-	-	-	-	-
Municipal Affairs, Recreation & Culture	-	-	-	-	-	-	-
Native Affairs	-	-	-	-	-	-	-
Parks	-	-	-	-	-	-	-
Regional Development	61	65	306	861	1,800	430	939
Tourism & Provincial Secretary	-	-	-	-	-	-	-
**Total	**2,114**	**77**	**306**	**886**	**1,825**	**430**	**1,896**

TABLE 65. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry or Agency, 1989-90[e] - Concluded

Ministry or agency	Social development					Transportation	Other	Total
	Culture, sport & recreation	Education	Human resources	Urban & regional studies	Other			
	($'000)							
Advanced Education & Job Training ..	-	607	-	-	55	-	-	1,187
Attorney General	-	-	-	-	660	-	-	660
Education	-	955	-	-	-	-	-	1,180
Environment	25	-	-	-	-	-	-	85
Finance & Corporate Relations	-	25	25	-	1,324	25	-	2,492
Health	-	-	-	-	-	-	-	2,103
Labour & Consumers Services	-	-	80	-	5	-	-	85
Municipal Affairs, Recreation & Culture	3,769	409	-	651	-	-	-	4,829
Native Affairs	5	-	-	-	-	-	-	5
Parks	202	-	-	-	-	-	-	202
Regional Development	370	-	121	452	-	-	76	6,160
Tourism & Provincial Secretary	4,857	-	-	-	-	-	-	4,857
**Total	**9,228**	**1,996**	**226**	**1,103**	**2,044**	**25**	**76**	**23,845**

TABLE 66. Objective of Expenditures in the Social Sciences and Humanities, by Activity, 1989-90[e]

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
	($'000)				
Advancement of science	-	380	-	225	605
Communications	-	233	-	254	487
Energy & fuels:					
Fossil fuels	-	12	-	-	12
Other	-	80	-	43	123
Environmental issues:					
Land	-	-	-	50	50
Other	-	221	-	115	336
Health	200	1,453	50	411	2,114
Industrial & economic development:					
Agriculture	-	12	-	65	77
Fisheries	-	112	-	194	306
Forestry	-	586	-	300	886
Manufacturing	-	1,288	-	537	1,825
Minerals	-	280	-	150	430
Other	-	1,574	-	322	1,896
Social development:					
Culture, sport & recreation	-	8,701	-	527	9,228
Education	25	1,118	84	769	1,996
Human resources	-	226	-	-	226
Urban regional studies	-	643	28	432	1,103
Other	-	1,504	-	540	2,044
Transportation	-	25	-	-	25
Other	-	54	-	22	76
Total	**225**	**18,502**	**162**	**4,956**	**23,845**

APPENDIX

THE RESPONDENTS

The following Ministries were involved in scientific activities in the province of British Columbia in 1988-89. The coordinator listed is the person in each Ministry who assisted us in attaining the statistics. We wish to thank the coordinators, as well as those assisting in the amalgamation of data, for their time and efforts in providing us with these statistics.

Advanced Education and Job Training

Coordinator: Terry Prentice (387-2034)

Six divisions within this Ministry are engaged in scientific activities: Funding and Analysis, Labour Market Policy, Policy, Planning and Legislation, Programs Division, Science and Technology and Women's Secretariat. The Ministry administers programs that provide grants and contributions to industry, universities and other agencies for the purpose of scientific and technological research and development. Such programs are the Economic and Regional Development Agreement (ERDA), the new Science and Technology Development Fund (STDF) and the Health Development Fund (HDF). They also perform some scientific activities internally as well as fund extramural related scientific activities.

Expenditures of this Ministry have increased by over $12 million dollars since 1987-88 to make this Ministry the second largest supporter of scientific activities in the Government of British Columbia in 1988-89. The reason for the large increase in expenditures is the implementation of the STDF. The fund is channeled through the Ministry in 1988-89 and through both the Ministry and the B.C. Science Council in 1989-90.

Agriculture and Fisheries

Coordinator: Mark Aiyadurai (387-7168)
Coordinator: Rick Deegan (387-9580)

The mission of this Ministry is to enhance the productivity of agricultural and fish products. On the Agriculture side, the Development and Extension, Information and Statistics and Quantitative Analysis Branches all reported scientific activities, mostly related scientific activities (92%) and mostly performed within facilities of the Ministry (65%). The ERDA agreement, with expenditures increasing substantially in 1988-89, is administered by the Ministry of Agriculture and Fisheries.

On the Fisheries side, Aquaculture Industry Development, Aquaculture Operations and Commercial Fisheries Divisions all perform and fund scientific activities that pertain to the fisheries industry.

Attorney General

Coordinator: Jim O'Hare (387-5007)

The Management Services and Regulatory Program Branch reported science activities in the social sciences and humanities. The Branch is responsible for evaluation analysis and justice system related research e.g. evaluation of Court Services programs, analysis of impact of legislative changes etc.

A decrease in expenditures in this Ministry over 1987-88 is shown in the Statistical Tables. This is due to a re-organization within the Ministry where some of the reporting Divisions were moved to the Ministry of Solicitor General. The Ministry of Solicitor General replied that they did not conduct any scientific activities.

Crown Lands

Coordinator: Gary Sawayama (387-9327)

Scientific activities of this Ministry are reported by the Surveys and Resource Mapping Branch who before the governments latest reorganization, was part of the Ministry of Environment and Parks. The branch is responsible for provision of baseline, geographically referenced data covering the entire land mass of British Columbia. Most of the Branches activities in 1988-89 are technical surveys and information services. They contract out 57% of their work to the industry sector. Most of these contracts are for topographic mapping and geodetic and aerial surveys. The major contract is for a program called TRIM (Terrain Resource Information Management) which is the development of computerized terrain data for use among government and private sector consumers.

THE RESPONDENTS - Continued

Education Coordinator: Dr. Sam Lim (356-2345)

The units reporting scientific activities were Finance and Administration, Policy and Planning, Program Evaluation and Research and Student Assessment. Activities include surveys of public opinion to specific projects, public policy reviews, facility and buildings policy reviews and reviews of evaluation/assessment program of the Ministry.

Expenditures collected during this years survey are substantially lower than in previous years. This is due to different interpretation of the definition of scientific activities by the respondent. The estimation process for the Ministry is being reviewed and revisions will be made next year.

Energy, Mines and Petroleum Resources Coordinator: Tim Chatton (387-1368)

The science activities of three different Branches were included in the Ministry's report: Engineering and Inspection, Geological Survey, and Mineral Policy. The Ministry also administers the Mineral Development Agreement which is part of the Canada/British Columbia Economic and Regional Development Agreement (ERDA).

Expenditures of this Ministry show a decrease in 1988-89 due to the exclusion of activities of the Energy Resources Division. This Division reported $2.5 million dollars in the social sciences and humanities in 1987-88 but in 1988-89 the respondent interprets the definitions in a way that current activities of the Division are not scientific. This interpretation shall be reviewed again next year.

Environment Coordinator: Cathy Carr (387-9886)

Branches reporting scientific activities are: Planning and Assessment, Recreational Fisheries, Waste Management, Water Management and Wildlife. Ninety five percent of the science activities were performed in facilities of the Ministry. Twenty percent of the activities are for research and development, the remainder being spent on related scientific activities.

A reorganization of the Ministry moved the Surveys and Resource Mapping Branch to the Ministry of Crown Lands. Also, the Parks Management Services Branch was moved to create the Ministry of Parks.

Finance and Corporate Relations Coordinator: Steve Miller (387-0365)

This Ministry reports information resulting from studies carried out by Administration and Support Services Division, Corporate Relations and Treasury Board Staff, which provide data for policy formulation on economic and corporate issues. It also reports the development of statistical models and systems completed by the Central Statistics Bureau to describe economic and social structures in B.C.

The Central Statistics Bureau became part of this Ministry during the reorganization of the government in 1988. The Bureau was formerly with Economic Development.

Forests Coordinator: Gail Archibald (387-3370)

The Ministry of Forests was the largest supporter of scientific activities of the B.C. Government in 1988-89, spending $34.4 million which is 27% of the Governments total scientific activities. The Branches which reported scientific activities were Industry Development and Marketing, Integrated Resources, Inventory, Protection, Research, and Silviculture. Seventy seven percent of the activities are performed within facilities of the Ministry itself. Scientific activities are split 53% to 47% research and development and related scientific activities respectively. The Research Branch administered just over $3 million in R&D contracts funded by the Forest Resource Development Agreement.

We wish to note that expenditures reported by the Industry Development and Marketing Branch do not include a capital grant to Forintek for construction of a new research facility. This capital grant amounts to $4.75 million in 1988-89 and $4.0 million in 1989-90.

THE RESPONDENTS - Continued

Health Coordinator: William J. Lawrence (387-2339)

Social science activities were identified by the following areas: Ambulance Service, Epidemiology, Hospital Programs, the Library, Research and Evaluation and Vital Statistics. Ninety one percent of the activities are related scientific activities and work is performed within the Ministry as well as funded in universities, hospitals and health organizations, the B.C. Research Council and other sectors.

Health Care Research Foundation Coordinator: Max Cairns (438-2752)

The Foundation awards grants and research fellowships to researchers mainly in the university sector. The Research Secretariat of B.C. provides administrative support to the Foundation. The source of funds for the Foundation are the B.C. Lotteries Fund, reserves and investments.

Labour and Consumer Services Coordinator: Bruce McCulloch (387-1754)

The Policy and Legislation Branch reported performing related scientific activities in the social sciences. All the work was done intramurally. The activities reported by the Branch concerned labour relations, employment standards etc.

Municipal Affairs, Recreation and Culture Coordinator: Peter Lofthouse (387-4052)
Pat Williamson (387-4052)

This Ministry was created after the government reorganization which took place in 1988.

Scientific activities of the B.C. Heritage Trust, the Policy and Research Branch and the Provincial Museum make up the response for this Ministry. Data for the Museum was estimated by Statistics Canada as we were unsuccessful in acquiring a response. Most activities are related scientific activities. The bulk of the expenditures are those of the Provincial Museum.

A historical revision was completed this year on expenditures of the Provincial Museum back to 1985-86. The revision includes rent charged to the museum that now appears in the budget of the museum. Because the museum is a total science agency, all costs relating to its functioning would be included as part of its scientific activities. Before 1985-86, one could not easily determine what the rent charges were so they were not included. The rent charges we have added are between $3 to $4 million each year.

Native Affairs Coordinator: Mary Koyl (356-8281)

This Ministry was created through the reorganization of the government in 1988.

The Social Policy unit reports costs of a feasibility study on establishing native heritage, culture and language centres in B.C. The work is contracted out to a consultant.

Parks Coordinator: Edna Joyce (387-4519)

The Parks Management Services Branch reports related scientific activities in both the natural and social sciences. All activities are performed intramurally. In 1987-88, Parks was part of the Ministry of Environment and Parks.

THE RESPONDENTS - Concluded

Regional Development Coordinator: Andre Gour (660-4046)

Regional Development came into being after a reorganization of the Ministry of Economic Development. The split was clear in that policy sections went to Regional Development and international sections became International Business and Immigration. The Central Statistics Bureau went to the Ministry of Finance and Corporate Relations. The International Business and Immigration Ministry had no scientific activities to report.

Several branches report related scientific activities in the social sciences in 1988-89. Activities being done are industrial policy studies, high tech development analysis, ERDA project analysis, regional development studies/strategies, infrastructural needs/gaps/analysis etc. Fifty nine percent of the activities are conducted in-house, whereas most other activities are contracted out to the industry sector.

Science Council of B.C. Coordinator: Max Cairns (438-2752)

The Council provided awards for research projects, mainly to researchers in the university and industry sectors in 1988-89. The Graduate Research Engineering and Technology (GREAT) Awards, the Industrial Post-doctoral Fellowships (IPDF), the Assistance Grants for Applied Research (AGAR), the S&T Awards for Returning Students (STARS), and the Market Assessment of Research and Technology (MART) programs are administered by the Science Council. The Research Secretariat of B.C. provides administrative services to the Science Council and the Health Care Research Foundation.

In 1989-90 an extra $12 million from the S&T Development Fund (STDF) will also be administered by the Council. The STDF is a new fund put in place by the Priemiers Advisory Council on S&T (PACST) early in 1988.

Social Services and Housing Coordinator: Gerald Merner (387-6460)

Mr. Merner insisted that the Ministry did not have any scientific activities. A reorganization had taken place in the Ministry in 1987-88 and the response for that year had been estimated. Response from Mr. Merner this year indicates we should revise 1987-88 data to a nil response and report also a nil response to this years survey. This is what we have done.

Tourism, and Provincial Secretary Coordinator: Margo Inches (387-1566)

This Ministry was created during the government reorganization in 1988.

In 1988-89 the Research Services Branch (Tourism) reports related scientific activities in the social sciences and humanities. Activities are economic and policy surveys and studies relating to the tourism industry in B.C. The Branch also administers the ERDA Tourism Agreement.

The Provincial Archives (Provincial Secretary) reported their related scientific activities in the social sciences and humanities. In 1987-88 there was a Communications program with Provincial Secretary. It has been moved to Regional Development.

Transportation and Highways Coordinator: R.Glen McDonald (387-5997)

Geotechnical and Materials Engineering Branch reported small R&D activities in the natural sciences. The new Planning Services Division, formed in January 1989 has estimated some scientific activities for 1989-90.

Expenditures of this Ministry have decreased since 1987-88. This is due in part to having a new co-ordinator whose interpretation of scientific activities differs from the previous co-ordinator.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

1. Economic Indicators

Province	Population January/89(1)		Provincial Gross Domestic Product per capita 1987(1)		Gross Domestic Expenditures on Research and development, 1987(2)		Provincial GERD/PGDP 1987-88	
	(000)	Rank	($)	Rank	($'000,000)	Rank	(%)	Rank
Newfoundland	569	9	12,545	9	70	9	1.0	4
Prince Edward Island	130	10	12,369	10	13	10	0.8	9
Nova Scotia	885	7	15,112	7	159	6	1.2	3
New Brunswick	716	8	14,788	8	89	8	0.8	8
Québec	6,668	2	19,769	4	1,713	2	1.3	2
Ontario	9,514	1	23,615	2	4,010	1	1.8	1
Manitoba	1,082	5	18,530	5	186	5	0.9	5
Saskatchewan	1,007	6	17,171	6	148	7	0.9	7
Alberta	2,415	4	24,423	1	546	3	0.9	6
British Columbia	**3,029**	**3**	**20,349**	**3**	**459**	**4**	**0.7**	**10**
Canada(3)	**26,094**		**21,055**		**7,395**		**1.4**	

(1) **Canadian Economic Observer,** Statistics Canada, Catalogue No. 11-010, July 1989
(2) **Indicators of Science and Technology,** Catalogue No. 88-002, Vol. 1, No. 2, October 1989.
(3) Includes the Yukon and Northwest Territories.

2. Higher Education

Province	Total research and development expenditures in the higher education sector, 1987-88(1)			Sponsored research in universities, 1987-88(2)		
	($'000,000)	Per capita ($)	Rank	($'000,000)	Per capita ($)	Rank
Newfoundland	35	61	5	15	26	8
Prince Edward Island	3	23	10	1	8	10
Nova Scotia	57	64	4	29	33	6
New Brunswick	29	40	9	14	19	9
Québec	390	58	6	304	46	1
Ontario	710	74	3	398	42	3
Manitoba	81	75	2	40	37	4
Saskatchewan	52	52	7	35	35	5
Alberta	226	94	1	108	45	2
British Columbia	**136**	**45**	**8**	**87**	**29**	**7**
Canada	**1,719**	**66**		**1,031**	**39**	

(1) "Estimation of Research and Development Expenditures in the Higher Education Sector, 1987-88", July, 1989, Science, Technology and Capital Stock Division, Statistics Canada, ST-89-05.
(2) **Financial Statistics of Universities and Colleges, 1987-88,** Canadian Association of University Business Officers.

3. Industry

Province	Value added by manufacturing activity per capita, 1986(1)		Current intramural industrial R&D expenditures per employee in primary and secondary industry, 1987(2)	
	($)	Rank	($)	Rank
Newfoundland	1,176	8	19	10
Prince Edward Island	823	10	100	8
Nova Scotia	2,063	6	130	7
New Brunswick	2,143	5	85	9
Québec	3,924	2	941	2
Ontario	5,764	1	1,237	1
Manitoba	2,225	4	134	6
Saskatchewan	1,122	9	184	5
Alberta	2,062	7	443	3
British Columbia	**2,901**	**3**	**401**	**4**
Canada(3)	**3,927**		**852**	

(1) **Manufacturing Industries of Canada; National and Provincial Areas, 1986**, Statistics Canada, Catalogue No. 31-203.

(2) Results of 1987 Industrial R&D survey, Science, Technology and Capital Stock Division, Statistics Canada and **The Labour Force, July, 1989**, Statistics Canada, Catalogue No. 71-001.

(3) Includes the Yukon and Northwest Territories.

4. Federal Government

Province	Total intramural expenditures on scientific activities 1987-88(1)	Total Federal scientific personnel 1987-88(2)	Total extramural payments on scientific activities 1987-88(1)
	($'000,000)	(Person-years)	($'000,000)
Newfoundland	50	556	19
Prince Edward Island	8	139	8
Nova Scotia	131	1,733	52
New Brunswick	37	581	18
Québec	314	4,046	463
Ontario	1,495	20,906	601
Manitoba	93	1,643	46
Saskatchewan	51	755	39
Alberta	104	1,512	85
British Columbia	**136**	**1,750**	**165**
Canada(3)	**2,443**	**33,831**	**1,505**

(1) **Science Statistics**, Catalogue No. 88-001, Vol. 13, No. 1, June 1989.

(2) "Staff and Expenditures of Federal Scientific Establishments 1987-88", July 1989, Science, Technology and Capital Stock Division, Statistics Canada, ST-89-06.

(3) Includes the Yukon and Northwest Territories.

5. Provincial

Province	Total provincial expenditures on scientific activities, 1987-88(1)			Total scientific expenditures of Provincial Research Organizations, 1987(2)	
	($'000)	Per capita ($)	Rank	($'000)	Rank
Newfoundland	27,674	49	2	...	...
Nova Scotia	37,683	42	4	6,763	7
New Brunswick	22,715	32	8	8,837	6
Québec	...	...	...	28,563	2
Ontario	358,296	38	5	26,024	3
Manitoba	36,859	34	7	5,477	8
Saskatchewan	47,141	47	3	16,355	4
Alberta	242,911	100	1	43,476	1
British Columbia	**113,199**	**37**	**6**	**8,569**	**5**
Total				**141,064**	

(1) "Scientific and Technological Activities of Provincial Governments, 1981-82 to 1988-89", Science, Technology and Capital Division, Statistics Canada, May 1989, ST-89-02.
(2) Results of the 1987 survey of Provincial Research Organizations, Science, Technology and Capital Stock Division, Statistics Canada.

6. Gross Domestic Expenditures on R&D in Canada, by Performing Sector, by Province, 1987

Province	Federal government	Provincial government	Provincial research organization	Total government	Industry	University	Private non-profit	All sectors
	($'000,000)							
Newfoundland	24	4	-	28	7	35	-	70
Prince Edward Island	7	-	-	7	3	3	-	13
Nova Scotia	71	3	3	77	24	57	1	159
New Brunswick	26	2	3	31	28	29	1	89
Québec	157	45	21	223	1,063	390	37	1,713
Ontario	744	56	12	812	2,440	710	48	4,010
Manitoba	70	1	2	73	28	81	4	186
Saskatchewan	39	3	6	48	48	52	-	148
Alberta	59	22	27	108	211	227	-	546
British Columbia	**83**	**15**	**3**	**101**	**216**	**136**	**6**	**459**
Canada(1)	**1,281**	**151**	**77**	**1,509**	**4,069**	**1,720**	**97**	**7,395**

Source: Estimates of Canadian Research and Development Expenditures (GERD), National 1963 to 1989, and by Region 1979 to 1987, Science, Technology and Capital Stock Division, Statistics Canada, August 1989, ST-89-08.
(1) Includes the Yukon and Northwest Territories.

7. Gross Domestic Expenditures on R&D in Canada, by Funding Sector, by Province, 1987

Province	Federal government	Provincial government	Provincial research organization	Total government	Industry	University	Private non-profit	All sectors (2)
	($'000,000)							
Newfoundland	36	4	-	40	7	21	1	70
Prince Edward Island .	10	-	-	10	1	2	-	13
Nova Scotia	103	5	-	108	17	27	4	159
New Brunswick	39	5	-	44	17	15	-	89
Québec	483	175	-	658	834	82	39	1,713
Ontario	1,174	136	-	1,310	1,769	322	67	4,010
Manitoba	96	7	-	103	28	41	12	186
Saskatchewan	64	18	-	82	45	17	2	148
Alberta	113	98	2	213	196	119	9	546
**British Columbia	**190**	**29**	**-**	**219**	**170**	**49**	**12**	**459**
**Canada(1)	**2,309**	**477**	**2**	**2,788**	**3,085**	**695**	**146**	**7,395**

Source: Estimates of Canadian Research and Development Expenditures (GERD), National 1963 to 1989, and by Region 1979 to 1987, Science, Technology and Capital Stock Division, Statistics Canada, August 1989, ST-89-08.
(1) Includes the Yukon and Northwest Territories.
(2) Includes Foreign sources of funds.

8. Gross Domestic Expenditures on R&D in British Columbia, 1987

Funding sector	Performing sector							
	Government				Business enterprise	Higher education	Private non-profit	Total
	Federal	Provincial	BC Research Council	Total				
		($'000,000)						
Government								
Federal	83	-	1	84	43	62	1	**190**
Provincial	-	15	1	16	6	7	-	**29**
PRO	-	-	-	-	-	-	-	**-**
Sub-total	83	15	2	100	49	69	1	**219**
Business enterprise	-	-	1	1	159	10	-	**170**
Higher education	-	-	-	-	-	49	-	**49**
Private non-profit	-	-	-	-	-	7	5	**12**
Foreign	-	-	-	-	8	1	-	**9**
**Total	**83**	**15**	**3**	**101**	**216**	**136**	**6**	**459**

Source: Estimates of Canadian Research and Development Expenditures (GERD), National 1963 to 1989, and by Region 1979 to 1987, Science, Technology and Capital Stock Division, Statistics Canada, August 1989, ST-89-08.

9. Federal Government Grants and Contracts to Industry for R&D in the Natural Sciences, by Selected Department/Program and Region, 1987-88

Department/Program	NFLD	PEI	NS	NB	QUE	ONT	MAN	SASK	ALTA	BC	CANADA(1)
	($'000,000)										
A. R&D Grants:											
Regional Industrial Expansion:											
Industrial and Regional Development Program	--	-	-	-	17.8	10.9	-	-	-	-	28.7
Defence Industry Productivity Program	-	-	5.9	-	83.9	52.3	-	-	-	**6.3**	148.4
Other	--	-	-	--	4.6	5.3	--	--	--	--	10.1
Sub-total	--	-	5.9	--	106.4	68.5	--	--	--	**6.3**	187.2
National Research Council:											
Industrial Research Assistance Program	0.7	1.2	1.6	1.4	11.1	22.4	1.8	1.7	3.8	**5.6**	51.3
Other	0.3	-	0.1	0.2	10.0	2.8	0.9	0.1	0.4	**0.4**	15.3
Sub-total	1.0	1.2	1.7	1.6	21.1	25.2	2.7	1.8	4.2	**6.0**	66.6
Other	-	1.9	0.1	0.3	24.3	10.9	0.5	2.1	1.3	**2.4**	43.8
Total	**1.0**	**3.1**	**7.8**	**1.9**	**151.8**	**104.7**	**3.2**	**3.9**	**5.5**	**14.7**	**297.6**
B. R&D Contracts:											
National Defence	0.1	-	2.1	--	9.1	67.7	6.0	0.1	1.8	**3.1**	90.0
National Research Council	0.5	-	-	-	1.0	24.1	0.9	6.1	-	-	32.6
Supply and Services	0.2	-	0.8	-	0.9	3.2	0.3	0.1	0.6	**5.5**	11.6
Other	1.0	0.3	4.0	0.9	17.4	29.2	2.0	1.3	5.1	**7.5**	68.7
Total	**1.8**	**0.3**	**6.9**	**0.9**	**28.4**	**124.2**	**9.2**	**7.5**	**7.5**	**16.1**	**202.9**
Total, grants and contracts	**2.8**	**3.4**	**14.6**	**2.8**	**180.2**	**228.9**	**12.4**	**11.4**	**13.0**	**30.8**	**500.5**

Source: **Science Statistics**, Catalogue No. 88-001, Vol. 13, No. 1, June 1989.

(1) Includes Yukon and Northwest Territories.

The data expressed here are regional representations and will not correspond to Canada aggregates shown in other Statistics Canada publications. Total may not add due to rounding.

10. Federal Government Expenditures on Activities in the Natural Sciences, by Region and Selected Departments, 1987-88

Region	Agriculture	Energy, Mines and Resources	Environment	Fisheries and Oceans	Regional Industrial Expansion	National Research Council	Natural Sciences and Engineering Research Council	Other	Total
	($'000,000)								
Newfoundland	2	3	5	26	-	10	5	9	60
Prince Edward Island .	7	5	1	-	-	1	-	1	15
Nova Scotia	9	17	16	57	6	12	10	30	157
New Brunswick	9	2	6	12	1	2	6	12	50
Québec	29	40	54	20	109	57	72	240	621
Ontario	111	219	140	24	89	283	144	516	1,526
Manitoba	24	1	18	11	--	8	10	54	126
Saskatchewan	25	7	13	-	--	20	10	8	83
Alberta	28	23	32	-	1	5	30	53	172
British Columbia	**19**	**14**	**37**	**41**	**6**	**42**	**42**	**69**	**270**
Canada(1)	**263**	**338**	**334**	**191**	**212**	**440**	**329**	**993**	**3,100**

Source: "Federal Government Science Expenditures by Region, 1982-83 to 1987-88", Science, Technology and Capital Stock Division, Statistics Canada, June 1989.

(1) Includes Yukon and Northwest Territories.

11. Federal Government Intramural Expenditures on Activities in the Natural Sciences, by Region and Selected Departments, 1987-88

Region	Agriculture	Atomic Energy of Canada Ltd	Energy, Mines and Resources	Environment	Fisheries and Oceans	National Defence	National Research Council	Other	Total
	($'000,000)								
Newfoundland	2	-	-	5	26	-	8	4	45
Prince Edward Island ..	6	-	-	1	-	-	-	1	8
Nova Scotia	8	-	14	15	53	15	9	1	115
New Brunswick	9	-	-	6	12	-	-	8	35
Québec	28	-	14	53	19	40	33	41	228
Ontario	110	78	192	132	24	50	231	204	1,021
Manitoba	22	34	-	17	10	-	4	-	87
Saskatchewan	21	-	3	12	-	-	11	1	48
Alberta	28	-	18	30	-	16	-	7	99
British Columbia	**19**	**-**	**8**	**27**	**38**	**17**	**9**	**9**	**127**
Canada(1)	**253**	**112**	**256**	**310**	**183**	**138**	**305**	**277**	**1,832**

Source: "Federal Government Science Expenditures by Region, 1982-83 to 1987-88", Science, Technology and Capital Stock Division, Statistics Canada, June 1989.

(1) Includes Yukon and Northwest Territories.

12. Federal Government Intramural Expenditures on R&D in the Natural Sciences, by Region and Selected Departments, 1987-88

Region	Agriculture	Atomic Energy of Canada Ltd	Energy, Mines and Resources	Environment	Fisheries and Oceans	National Defence	National Research Council	Other	Total
	($'000,000)								
Newfoundland	2	-	-	-	10	-	7	3	22
Prince Edward Island	6	-	-	-	-	-	-	1	7
Nova Scotia	8	-	1	1	32	15	8	-	65
New Brunswick	8	-	-	2	6	-	-	8	24
Québec	28	-	11	5	11	40	28	19	142
Ontario	97	73	59	30	9	48	195	121	632
Manitoba	19	32	-	1	9	-	3	-	64
Saskatchewan	21	-	-	6	-	-	9	-	36
Alberta	27	-	4	2	-	16	-	4	53
British Columbia	**19**	**-**	**-**	**1**	**27**	**17**	**7**	**5**	**76**
Canada(1)	**235**	**105**	**75**	**48**	**104**	**136**	**257**	**162**	**1,122**

Source: "Federal Government Science Expenditures by Region, 1982-83 to 1987-88", Science, Technology and Capital Stock Division, Statistics Canada, June 1989.
(1) Includes Yukon and Northwest Territories.

13. Federal Government Personnel Engaged in Activities in the Natural Sciences, by Region and Selected Departments, 1987-88

Region	Agriculture	Atomic Energy of Canada Ltd	Energy, Mines and Resources	Environment	Fisheries and Oceans	National Defence	National Research Council	Other	Total
	(person-years)								
Newfoundland	33	-	-	62	239	-	65	66	465
Prince Edward Island	107	-	-	14	6	-	1	-	128
Nova Scotia	140	-	134	233	619	209	92	17	1,444
New Brunswick	142	-	-	97	152	-	3	149	543
Québec	413	-	4	584	157	608	313	665	2,744
Ontario	1,654	1,793	2,213	1,324	321	708	2,598	2,982	13,593
Manitoba	360	769	2	240	133	-	21	18	1,543
Saskatchewan	374	-	4	194	-	-	122	-	694
Alberta	477	-	208	453	-	201	3	93	1,435
British Columbia	**266**	**-**	**77**	**374**	**478**	**137**	**102**	**168**	**1,602**
Canada(1)	**3,966**	**2,562**	**2,663**	**3,692**	**2,105**	**1,863**	**3,320**	**4,172**	**24,343**

Source: "Federal Government Science Expenditures by Region, 1982-83 to 1987-88", Science, Technology and Capital Stock Division, Statistics Canada, June 1989.
(1) Includes Yukon and Northwest Territories.

PROVINCIAL CO-ORDINATORS

Nine provincial governments sponsored the Science and Technology Statistics Section in the collection of similar scientific activity data. Below is a list of co-ordinators for the various sponsoring Departments/Ministries.

Mr. S. Battah
Co-ordinator - Council and Budgets
Science and Technology Secretariat
Department of Commerce and Technology
P.O. Box 6000
Fredericton, New Brunswick
E3B 5H1 Tel.: (506) 453-2489

Mr. S Slade / Ms. J. Orendorff
Technology Policy Branch
Ministry of Industry, Trade and Technology
Hearst Block, 900 Bay Street
6th Floor, Queen's Park
Toronto, Ontario
M7A 2E1 Tel.:(416) 963-1373

Mr. R. Hinther
Science Policy Advisor
Saskatchewan Science and Technology
108 Research Drive,
Mall 3, Innovation Place
Saskatoon, Saskatchewan
S7N 2X8 Tel.: (306) 933-7209

Dr. R. Humble / Mr. M. Cornell
Technology Division
Manitoba Industry, Trade and Tourism
214-155 Carlton Street
Winnipeg, Manitoba
R3C 3H8 Tel.: (204) 945-0127

Mr. P. Dober
Director, Statistical Services Branch
Department of Industry, Trade and Technology
P.O. Box 519, 1800 Argyle Street
Halifax, Nova Scotia
B3J 2R7 Tel.: (902) 424-5691

Dr. P. Noden
Director, Research and Statistics
Department of Technology, Research and Telecommunications
12th Floor, Pacific Plaza
10909 Jasper Avenue
Edmonton, Alberta
T5K 0L3 Tel.: (403) 422-0561

Mr. T.A. Prentice
Manager, Science and Technology Division
Ministry of Advanced Education & Job Training
818 Broughton Street
Victoria, British Columbia
V8V 1X4 Tel.: (604) 387-2034

Ms. J. Woodman
Development Officer
Technical Services Division
Department of Development and Tourism
P.O. Box 4750,
St. John's, Newfoundland
A1C 5T7 Tel.: (709) 576-5062

M. S. Bernier / Mme. C. Charron
Bureau de la statistique de Québec
117, rue St-André, 4ième étage
Québec, Québec
G1K 3X3 Tel: (418) 643-5118

PUBLICATIONS

The Science and Technology Statistics Program is one of the major responsibilities of the Science, Technology and Capital Stock Division. The basic mission of the Section is to assure the availability of pertinent statistical information in support of the development of science and technology in Canada.

Information is disseminated in a series of reports including monthly service bulletins, occasional background papers and annual reports which are described below.

Catalogued

88-001	Science Statistics (monthly)
88-002	Indicators of Science and Technology 1989 (quarterly)
88-201	Science and Technology Indicators, 1988 (discontinued after this issue)
88-202	Industrial Research and Development Statistics, 1987 (annual)
88-203	Resources for Research and Development in Canada, 1985 (out of print)
88-204	Federal Scientific Activities, 1989-90 (annual)
88-205E	Directory of Industrial Research and Development Facilities in Canada, 1986 (out of print)
88-206E	Directory of Federal Government Scientific and Technological Establishments, 1987 (out of print)
88-501E	An Indicator of Excellence in Canadian Science (occasional)
88-502E	International Payments and Receipts for Technology (occasional)
88-503E	Technology and Commodity Trade (occasional)
88-504E	Patents as Indicators of Invention (occasional)
88-505E	Industrial Productivity and Research and Development Indicators (occasional)
88-506E	A Framework for Measuring Research and Development Expenditures in Canada (occasional)
88-507E	An Indicator of Excellence in Canadian Science: Summary Report (occasional)
88-508	Human Resources for Science and Technology (occasional)
88-509	Price Indexes for Canadian Industrial Research and Development Expenditures (occasional)
88-510	The Individual Canadian Inventor (occasional)

The above catalogued publications can be purchased from:

Publication Sales
Statistics Canada
Ottawa, Ontario
K1A 0T6
(613) 951-7277

Working Papers

ST-89-01E	Federal Science Expenditure and Personnel, 1989-90
ST-89-02	Scientific and Technological Activities of Provincial Governments, 1981-82 to 1988-89
ST-89-03E	Questionnaires Used for the Collection of Science and Technology Statistics in 1989
ST-89-04	Research and Development in Canadian Industry, 1987
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